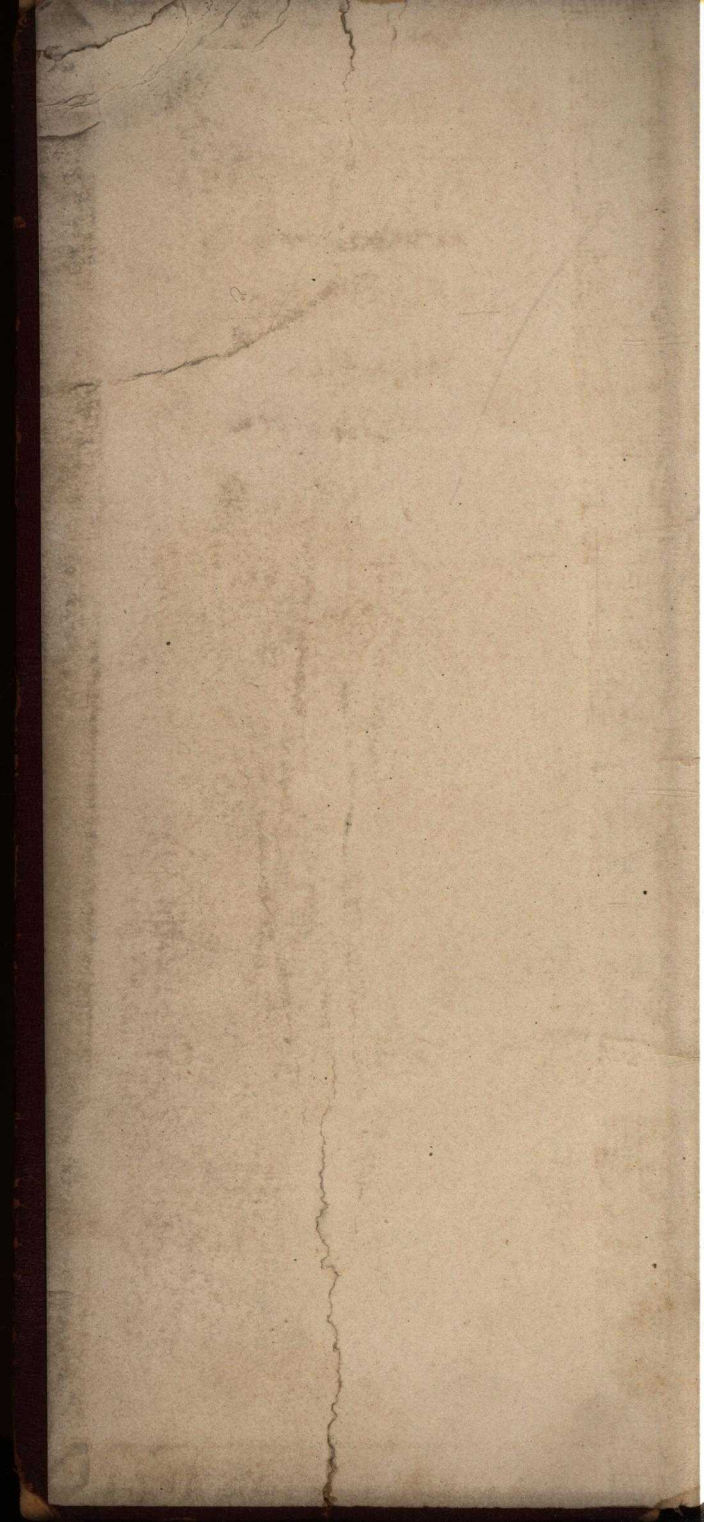


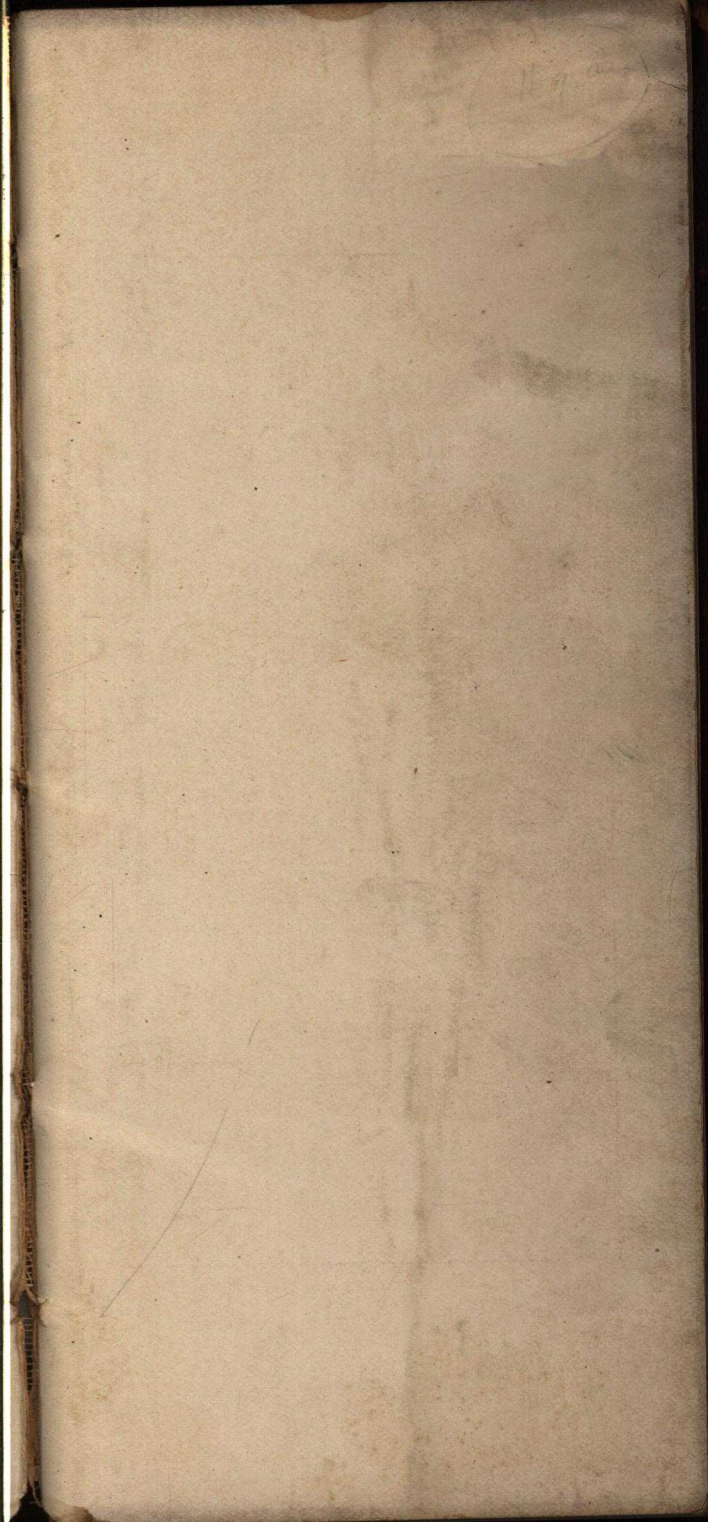
CATALOGUE OF

J.J. Fitzgerald & Co.

Sewer Pipe

Philadelphia, Penna.

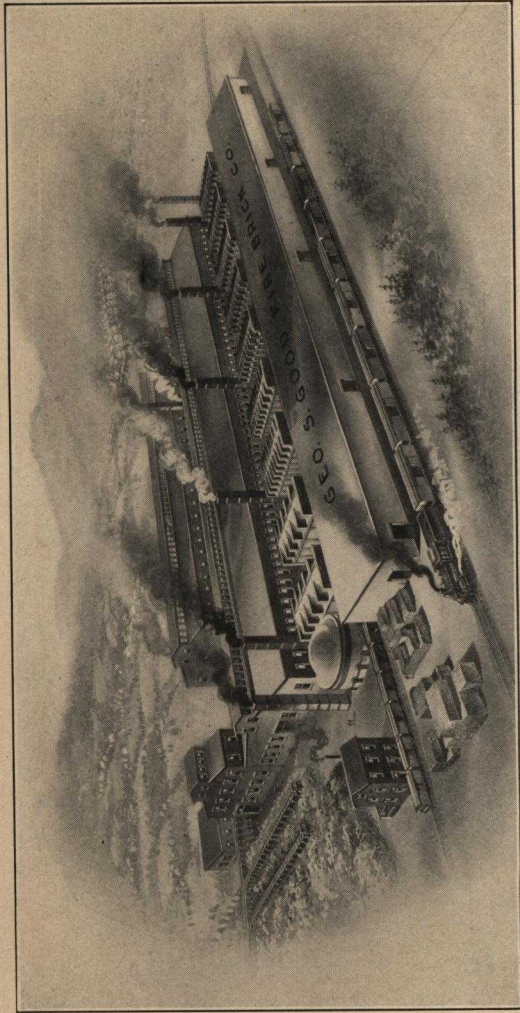






If you use Fire  
Brick ask for  
Special Catalog

Capacity  
80,000 High Grade  
9" Brick



FIRE BRICK PLANT, LUMBER, CLEARFIELD COUNTY, PENNSYLVANIA



Yards 1411 S. 47th Street

American and Butler Streets

## J. J FITZGERALD & CO.

MANUFACTURERS OF

IRON STONE

VITRIFIED, SALT GLAZED

# SEWER PIPE

STANDARD AND DOUBLE STRENGTH,  
FLUE LININGS, FIRE PROOFING,  
WALL COPING, ROOFING TILE,  
CONDUITS, BUILDING, PAVING,

## MILL AND FIRE BRICK

ORNAMENTAL LAWN VASES,  
CHIMNEY TOPS, AND ALL OTHER  
FIRE CLAY AND SHALE PRODUCTS

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### CAPACITY:

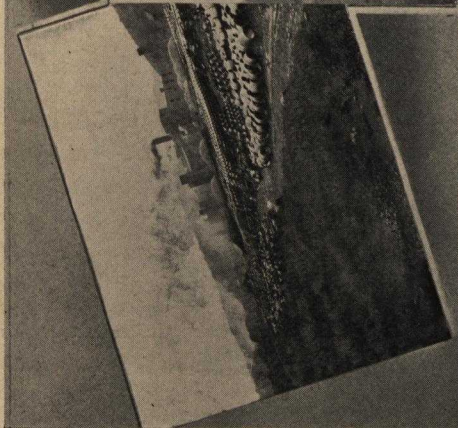
Sewer Pipe	- - - - -	4,000 Cars Annually
Paving and Building Brick	-	5,000 Cars Annually
High Grade Fire Brick	- -	3,000 Cars Annually

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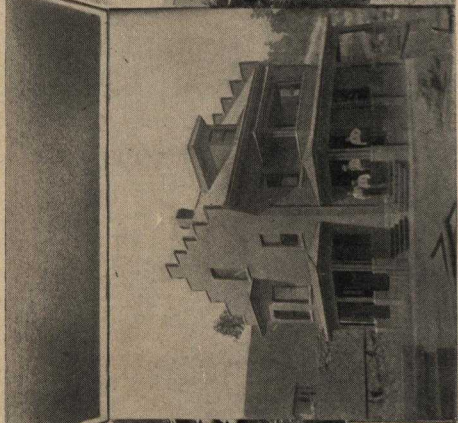
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Room 415-16 Rothschilds Building, 14 S. Broad St.

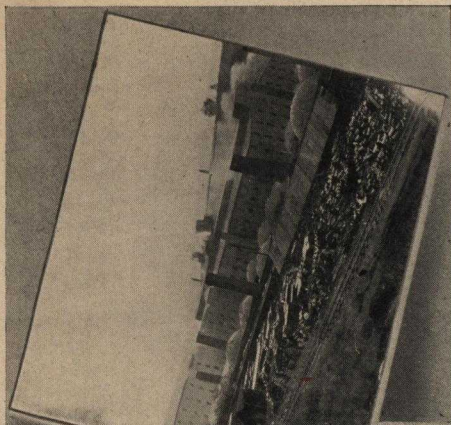
PHILADELPHIA, PA.



West end view of Factory, showing  
immense Yard Stock.

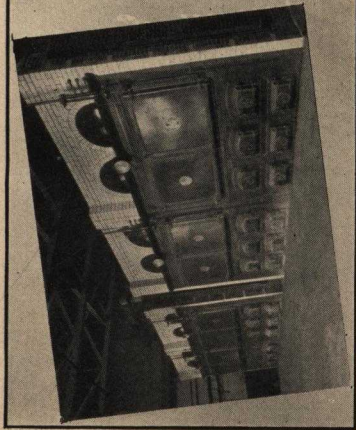


Main Office at the Factory.

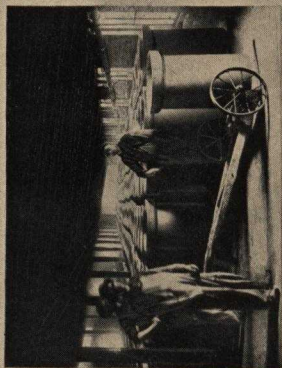


Showing view from North and  
a few of Kilns.

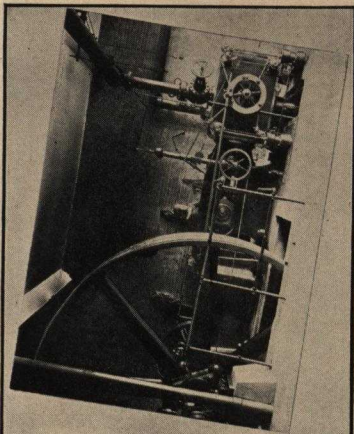




Batteries of Water Tube  
Boilers.



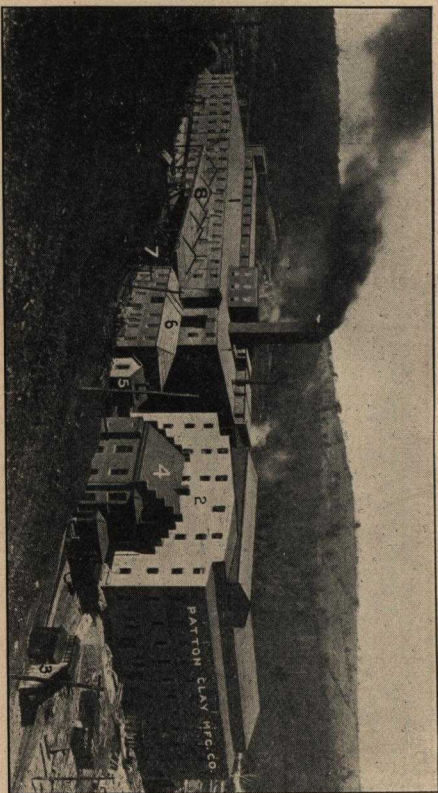
Section of Drying Floor, showing 3 ft.  
20" Pipe coming from Press.



500 H. P. Corliss Engine driving Sewer  
Pipe Factory and Electric  
Light Plant.



1. Sewer Pipe Factory, 150' x 300', five floors.
2. New five story Paving and Building Brick Plant, 100' x 170', four floors devoted to Sewer Pipe, Building Blocks, Moulded Ware, &c.
3. Engine and Fan, Ventilating the Coal and Clay Mines.



VIEW OF BUILDINGS FROM THE EAST

4. General Office.
5. Office used until 1905.
6. Blacksmith and Carpenter Shop.
7. Hoisting Engine at shaft mouth of our Coal and Clay Mines.
8. Clay Sheds, Crushers and Grinding Pans.

## TO THE TRADE

Nearly fifteen years ago we began the erection of a plant for the manufacture of salt glazed, vitrified sewer pipe and a year later we entered the market with our product with a capacity of some three or four car loads per day. Our growth has been steady, additional equipment, kilns, and floor space being added from time to time to meet the increasing demand, until 1905, when we found it necessary to entirely rebuild, and the original frame buildings were replaced by the fire proof brick buildings shown in the cuts on the preceding pages.

With over 300,000 square feet of floor space, thirty-five kilns and the proper machinery and equipment to utilize the same, the capacity has been increased more than sixfold and a train load of our products leave the factory each day of the active season, insuring prompt shipments on any orders entrusted to us. Notwithstanding the increased capacity, we are perhaps more solicitous today than ever before to have the business of the moderate and small buyer as well as the largest dealer, and it affords us the greatest pleasure to have on our books many accounts that have been active since the first or second year of our operation.

We carry a complete stock of all sizes from 2'' to 36'', both inclusive, and have most excellent railroad service, both as to car supply and freight rates, the tracks of the Pennsylvania R. R. Co. and the New York Central & Hudson River R. R. Co. entering our yards and with their connections make quickest deliveries to all points.

We are manufacturing Shale and Fire Clay Paving Blocks and Brick, also wire cut and repressed building brick in red and buff, our capacity in this line being 100,000 per day, and of a quality that have no superior for their respective uses.

High Grade Fire Brick for the most exacting service, in Blast and Malleable Iron Furnaces, Cement Kilns, Foundry Cupolas, Boiler Linings, Brick and Sewer Pipe Kiln Linings, &c., shipped in straight car loads or with our other products. Ground fire clay in bags or in bulk. We believe we can serve you in all, or any clay products, better than any other manufacturer and respectfully solicit an opportunity to demonstrate this.

PATTON CLAY MFG. CO.

July 1910, PATTON, PA.



## TERMS OF SALE AND DISCOUNTS

The list prices herein are subject to a very liberal discount to the trade, and we shall be pleased to furnish same, with freight allowed to your railroad station, upon request.

Less than car-load lots are always sold f. o. b. cars, Patton, Pa., or factory, and no allowance can be made for freight or other cause, errors, of course, excepted.

List prices and discounts are subject to change without notice, and buyers will understand that goods will be shipped at the list prices and discounts prevailing at time order is received, unless they expressly stipulate otherwise, when, if necessary, we will advise them of any change.

Every shipment is at risk of buyer, and no allowance for breakage, unless specifically covered in our quotation. We crate all goods carefully, and with safe delivery to the common carrier our responsibility ceases.

Goods made on order, other than standard, cannot be countermanded if in course of manufacture, and no order can be cancelled without our consent. No goods can be returned without our approval and instructions to so do, and credit will be then passed only for such as are received in the same good condition as they were sent out.

All orders and contracts are accepted subject to manufacturing and transportation contingencies over which we can exercise no control, such as accidents, labor troubles, fires, &c.

**TERMS**—Thirty days net, subject to sight draft at maturity, or 2% off net amount of bill for cash within 15 days from date of invoice, computed on the net amount, after freight or other deductions have been made.



## ABOUT PATTON SEWER PIPE AND ITS USES

Patton Sewer Pipe is recognized as the Standard of Quality, and has received favorable commendation wherever used, chiefly however in the New England, Middle and Southern States, in Canada, Mexico, Cuba and the Philippine Islands.

It is made from the very best grade of fire clay for this purpose, and burned at a temperature sufficiently high to produce thorough vitrification of the entire body, becoming thereby impervious to moisture, acids, action of gases, etc., and consequently cannot disintegrate or deteriorate as in the case of Concrete Sewers or those built of non-vitrious brick or clay pipe.

It is also further improved for resisting the action of sewer gases, moisture, frosts, etc., by being thoroughly covered over its entire inner and outer surface with a glass-like glaze which is done by introducing into the fires of the kiln, coarse salt in sufficient quantities and at the proper time, (when the ware in the kiln is heated to the point of incipient vitrification), the action between the free silica of the clay and the salt, producing the well known salt glaze, common to nearly all Sewer Pipe.

It is superior to either Cement or Brick Sewers in every respect; cleanliness is of the first importance, and in salt glazed, vitrified pipe sewers this feature is prominent; capacity is increased materially over Brick or Cement sewers of same size by reason of the surface of the interior being smooth and offers little resistance to the flow.

Cost in the smaller sizes is less than other so-called sewer pipe, and in the larger sizes, up to and including 36'', the cost is not much greater than cement or brick, and even the most cursory investigation of the results of past experiences with these materials in constructing sewers will convince any person that the superiority and desirability of the *Vitrified Salt Glazed Sewer Pipe* is beyond argument.

We will be glad to furnish Engineers or other interested parties an instructive booklet, giving

actual results and other information concerning the use of brick and concrete for Sewers.

All pipe are shipped of the hub and spigot pattern unless ring or other type are specially ordered. If the joints are desired to be made water tight a cement mortar, mixed one-half good Portland Cement and one-half clean sharp sand, will be found satisfactory.

For Township, County and Borough uses, under roads and streets, there is no material to equal Vitrified Fire Clay Sewer Pipe in service and economy. Plank Culverts and corrugated metal pipe are perhaps a trifle cheaper in first cost, but the undisputed fact that a vitrified fire clay pipe is not affected by rot or rust and is, therefore, everlasting, makes the difference of a few dollars in first cost unworthy of consideration for any permanent uses.

For Railroad Culverts we recommend the use of Double Strength Pipe in sizes larger than twelve or fifteen inch diameter.

For Well Linings sewer pipe in sizes twenty inches to thirty inches makes the cleanest, best and cheapest lining that is possible to put in. The pipe being cemented at the joints and allowed to extend perhaps a foot above the surface of the ground, keeps out all surface water and insures clean and pure water at all times.

Sewer Pipe properly bedded and laid cannot be crushed by any weight that might be put on it, in practical uses; all of our tests showing not less than a load of 20,000 pounds directly applied, do it any injury, and many tests showed an ability to withstand a pressure from without of nearly double that load.

Read directions for Laying Sewer Pipe on Page 45.



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## PAVING, BUILDING AND SIDEWALK BRICK

Our daily capacity in this line is **100,000 Brick**, and our material for the respective uses is very superior. We furnish either red shale or buff fire clay goods, to meet the demand or preference of the buyer.

Laboratory Tests of our Pavers, in accordance with the Standard Specifications of the National Brick Makers' Association, show them to be in the fore-front of **Quality**, and well within the requirements of the most exacting specifications for Paving Brick.

Further information as to sizes, etc., will be found on pages 38 and 46.

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## HIGH GRADE FIRE BRICK AND GROUND CLAY

Our new plant, located at Lumber City, Clearfield County, Pa., and manufacturing High Grade Fire Brick for all uses, embodies the best construction and machinery, for a daily capacity of **80,000** nine inch Fire Brick, which, together with an extensive acreage of the very best grades of Clearfield County Fire Clay, enables us to solicit your orders for strictly High Grade Fire Brick and Shapes, Ground Fire Clay, etc., for Blast Furnace Linings, Open Hearth and Malleable Furnaces, Blast Furnace Stove Brick, Cupolas, Rotary Cement Kilns, Lime Kilns, Glass Furnaces, Boiler Settings, Linings and Crown Brick for Brick and Sewer Pipe Kilns, Coke Ovens, etc., in short, for all purposes where the highest temperatures are in use and require a special refractory brick.

See page 39 for a few of the standard sizes and shapes or write us for our special Fire Brick Catalogue, a book full of general information and illustrations on that line of manufacture.



## STANDARD SEWER PIPE

And Revised Price List, Approximate Weights,  
Thickness, Depth of Socket, &c., as  
Adopted by Manufacturers'  
Association May  
2nd, 1910.



## STANDARD PIPE

Approximate Weights, Dimensions, &c.

Calibre	Thick- ness	Weight per foot	Depth of Socket	Annular Space	Price per ft
2 in.	$\frac{7}{16}$ in.	4 $\frac{1}{4}$ lbs.	1 $\frac{1}{2}$ in.	$\frac{1}{4}$ in.	\$ 20
3 "	$\frac{1}{2}$ "	6 $\frac{1}{4}$ "	1 $\frac{1}{2}$ "	$\frac{1}{4}$ "	20
4 "	$\frac{1}{2}$ "	8 $\frac{1}{2}$ "	1 $\frac{5}{8}$ "	$\frac{3}{8}$ "	25
5 "	$\frac{5}{8}$ "	12 "	1 $\frac{3}{4}$ "	$\frac{3}{8}$ "	30
6 "	$\frac{5}{8}$ "	15 "	1 $\frac{7}{8}$ "	$\frac{3}{8}$ "	40
8 "	$\frac{3}{4}$ "	25 "	2 "	$\frac{3}{8}$ "	55
9 "	$\frac{13}{16}$ "	28 "	2 "	$\frac{3}{8}$ "	65
10 "	$\frac{7}{8}$ "	35 "	2 $\frac{1}{8}$ "	$\frac{3}{8}$ "	80
12 "	1 "	48 "	2 $\frac{1}{4}$ "	$\frac{1}{2}$ "	1 00
15 "	1 $\frac{1}{8}$ "	65 "	2 $\frac{1}{2}$ "	$\frac{1}{2}$ "	1 35
18 "	1 $\frac{1}{4}$ "	85 "	2 $\frac{3}{4}$ "	$\frac{1}{2}$ "	1 90
20 "	1 $\frac{3}{8}$ "	100 "	3 "	$\frac{1}{2}$ "	2 25
21 "	1 $\frac{1}{2}$ "	120 "	3 "	$\frac{1}{2}$ "	2 70
22 "	1 $\frac{5}{8}$ "	130 "	3 "	$\frac{1}{2}$ "	3 00
24 "	1 $\frac{5}{8}$ "	150 "	3 $\frac{1}{4}$ "	$\frac{1}{2}$ "	3 25
27 "	2 "	224 "	4 "	$\frac{3}{4}$ "	4 50
30 "	2 $\frac{1}{8}$ "	252 "	4 "	$\frac{3}{4}$ "	5 50
33 "	2 $\frac{1}{4}$ "	310 "	5 "	1 $\frac{1}{4}$ "	6 25
36 "	2 $\frac{1}{2}$ "	350 "	5 "	1 $\frac{1}{4}$ "	7 00

Discounts governing prices of 2 to 24 inches will not apply to 27 to 36 inches.

**DOUBLE STRENGTH PIPE**

Approximate Weights, Dimensions, Etc.

Calibre	Thick- ness	Weight per foot	Depth of Socket	Annular Space	Price per foot
15 in.	1 $\frac{1}{4}$ in.	75 lbs.	2 $\frac{1}{2}$ in.	$\frac{1}{2}$ in.	\$1 35
18 "	1 $\frac{1}{2}$ "	118 "	2 $\frac{3}{4}$ "	$\frac{1}{2}$ "	1 90
20 "	1 $\frac{2}{3}$ "	138 "	3 "	$\frac{1}{2}$ "	2 25
21 "	1 $\frac{3}{4}$ "	148 "	3 "	$\frac{1}{2}$ "	2 70
22 "	1 $\frac{5}{8}$ "	157 "	3 "	$\frac{1}{2}$ "	3 00
24 "	2 "	190 "	3 $\frac{1}{4}$ "	$\frac{1}{2}$ "	3 25
27 "	2 $\frac{1}{4}$ "	265 "	4 "	$\frac{3}{4}$ "	4 50
30 "	2 $\frac{1}{2}$ "	290 "	4 "	$\frac{3}{4}$ "	5 50
33 "	2 $\frac{5}{8}$ "	335 "	5 "	1 $\frac{1}{4}$ "	6 25
36 "	2 $\frac{3}{4}$ "	375 "	5 "	1 $\frac{1}{4}$ "	7 00

Discounts governing prices of 15 to 24 inches will not apply to 27 to 36 inches.

The list prices of Pipe and Fittings are the same as apply on Standard. The discount is less.

**DEEP AND WIDE SOCKETS, STANDARD**

Approximate Weights, Dimensions, Etc.

Calibre	Thick- ness	Weight per foot	Depth of Socket	Annular Space	Price per Foot
4 in.	$\frac{1}{2}$ in.	10 lbs.	2 in.	$\frac{1}{2}$ in.	\$ 25
5 "	$\frac{5}{8}$ "	12 "	2 $\frac{1}{2}$ "	$\frac{5}{8}$ "	30
6 "	$\frac{5}{8}$ "	16 "	2 $\frac{1}{2}$ "	$\frac{5}{8}$ "	40
8 "	$\frac{3}{4}$ "	25 "	2 $\frac{3}{4}$ "	$\frac{5}{8}$ "	55
10 "	$\frac{7}{8}$ "	37 "	2 $\frac{3}{4}$ "	$\frac{5}{8}$ "	80
12 "	1 "	45 "	3 "	$\frac{5}{8}$ "	1 00
15 "	1 $\frac{1}{8}$ "	70 "	3 "	$\frac{5}{8}$ "	1 35
18 "	1 $\frac{1}{4}$ "	90 "	3 $\frac{1}{4}$ "	$\frac{5}{8}$ "	1 90
20 "	1 $\frac{3}{8}$ "	115 "	3 $\frac{1}{2}$ "	$\frac{5}{8}$ "	2 25
21 "	1 $\frac{1}{2}$ "	130 "	3 $\frac{5}{8}$ "	$\frac{5}{8}$ "	2 70
22 "	1 $\frac{5}{8}$ "	145 "	3 $\frac{3}{4}$ "	$\frac{5}{8}$ "	3 00
24 "	1 $\frac{5}{8}$ "	150 "	4 "	$\frac{5}{8}$ "	3 25

Discounts governing prices 2 to 24 inches will not apply to 27 to 36 inches.

**DEEP AND WIDE SOCKETS,  
DOUBLE STRENGTH**

Approximate Weights, Dimensions, Etc.

Calibre	Thick- ness	Weight per foot	Depth of Sockets	Annular Space	Price per Foot
15	1 $\frac{1}{4}$ in.	75 lbs.	3 in.	$\frac{5}{8}$	\$1 35
18	1 $\frac{1}{2}$ "	118 "	3 $\frac{1}{4}$ "	$\frac{5}{8}$	1 90
20	1 $\frac{2}{3}$ "	138 "	3 $\frac{1}{2}$ "	$\frac{5}{8}$	2 25
21	1 $\frac{3}{4}$ "	148 "	3 $\frac{5}{8}$ "	$\frac{5}{8}$	2 70
22	1 $\frac{5}{8}$ "	157 "	3 $\frac{3}{4}$ "	$\frac{5}{8}$	3 00
24	2 "	190 "	4 "	$\frac{5}{8}$	3 25

The list price of Pipe and Fittings is the same as on Standard. The discount is less.



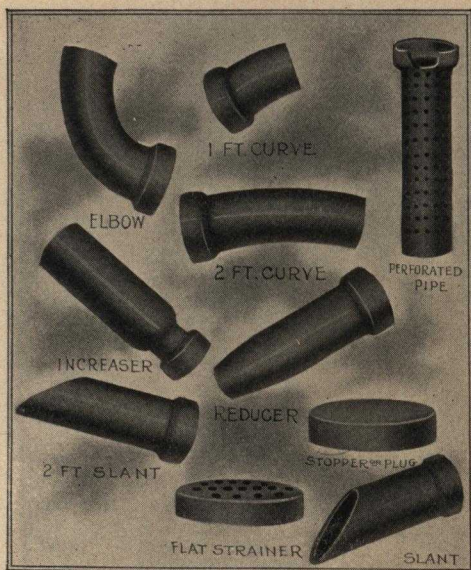


### PRICE LIST SINGLE AND DOUBLE BRANCHES

CALIBRE	Single Y & T Branches				Double Y T & V Branches			
	1 or 2 ft. long		2½ or 3 ft. long		1 or 2 ft. long		2½ or 3 ft. long	
	With Inlet 12" or under EACH	With Inlet 15" or larger EACH	With Inlet 12" or under EACH	With Inlet 15" or larger EACH	With Inlet 12" or under EACH	With Inlet 15" or larger EACH	With Inlet 12" or under EACH	With Inlet 15" or larger EACH
2"	\$ 80	.....	\$ 1 00	.....	\$ 1 00	.....	\$ 1 20	.....
3"	80	.....	1 00	.....	1 00	.....	1 20	.....
4"	1 00	.....	1 25	.....	1 25	.....	1 50	.....
5"	1 20	.....	1 50	.....	1 50	.....	1 80	.....
6"	1 60	.....	2 00	.....	2 00	.....	2 40	.....
8"	2 20	.....	2 75	.....	2 75	.....	3 30	.....
9"	2 60	.....	3 25	.....	3 25	.....	3 90	.....
10"	3 20	.....	4 00	.....	4 00	.....	4 80	.....
12"	4 00	.....	5 00	.....	5 00	.....	6 00	.....
15"	5 40	.....	6 75	\$ 9 45	6 75	.....	8 10	\$10 80
18"	7 60	.....	9 50	13 30	9 50	.....	11 40	15 20
20"	9 00	.....	11 25	15 75	11 25	.....	13 50	18 00
21"	10 80	.....	13 50	18 90	13 50	.....	16 20	21 60
22"	12 00	.....	15 00	21 00	15 00	.....	18 00	24 00
24"	13 00	.....	16 25	22 75	16 25	.....	19 50	26 00
27"	Made	Made	22 50	27 00	Made	Made	27 00	36 00
30"	only	only	27 50	33 00	only	only	33 00	44 00
33"	2½ & 3	2½ & 3	31 25	37 50	2½ & 3	2½ & 3	37 50	50 00
36"	ft. long	ft. long	35 00	42 00	ft. long	ft. long	42 00	56 00

Discounts governing 2" to 24" inclusive will not apply to 27" to 36".

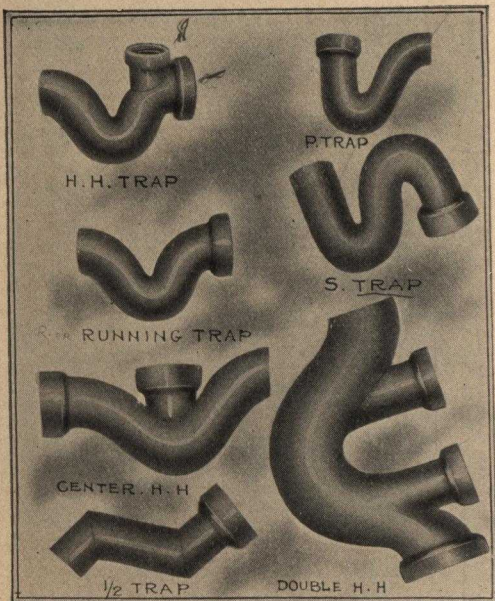




## PRICE LIST OF FITTINGS

Calibre of Pipe	Elbows and Curve	Slants 1 foot or less, per foot, long side	Increases and Reducers	Stoppers or Plugs	Flat Strainers	Perforated Pipe per foot
EACH	EACH	EACH	EACH	EACH	EACH	
2 in.	\$ 60	...	...	\$ 07	\$ 14	\$ 40
3 "	60	\$ 60	\$ 80	07	14	40
4 "	75	75	1 00	08	16	50
5 "	90	90	1 20	10	20	60
6 "	1 20	1 20	1 60	13	26	80
8 "	1 65	1 65	2 20	19	38	1 10
9 "	1 95	1 95	2 60	22	44	1 30
10 "	2 40	2 40	3 20	27	54	1 60
12 "	3 00	3 00	4 00	33	67	2 00
15 "	4 05	4 05	5 40	45	90	2 70
18 "	5 70	5 70	7 60	.....	.....	3 80
20 "	6 75	6 75	9 00	.....	.....	4 50
21 "	8 10	8 10	10 80	.....	.....	5 40
22 "	9 00	9 00	12 00	.....	.....	6 00
24 "	9 75	9 75	13 00	.....	.....	6 50
27 "	13 50	13 50	18 00	.....	.....	9 00
30 "	16 50	16 50	22 00	.....	.....	11 00
33 "	18 75	18 75	25 00	.....	.....	12 50
36 "	21 00	21 00	28 00	.....	.....	14 00

Discounts governing from 2" to 24" will not apply on 27" to 36".

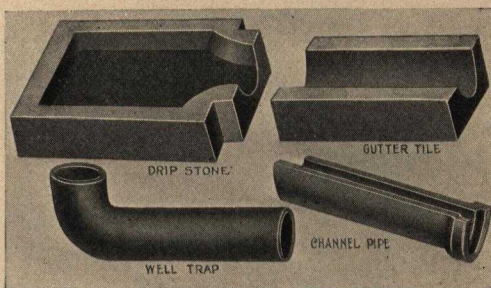


### PRICE LIST OF TRAPS

Calibre	R., P., S. and Single H. H. Traps EACH	Double H. H. Traps EACH	Two Piece Traps PER PAIR
2 inch	\$ 1 60	\$ 1 90	.....
3 "	1 60	1 90	.....
4 "	2 00	2 50	.....
5 "	2 40	3 13	.....
6 "	3 20	4 25	\$ 4 20
8 "	5 50	7 75	6 60
9 "	6 50	9 00	7 15
10 "	8 00	11 00	8 30
12 "	15 00	16 50	12 75
15 "	22 00	24 00	18 75



## CHANNEL PIPE, DRIP STONES AND GUTTER TILE



**CHANNEL PIPE**—Price 3-5 the price of whole pipe.

**WELL TRAPS**—List Price each :

6"—\$2.40    8"—\$3.30    9"—\$3.90    10"—\$4.80    12"—\$6.00

**DRIP STONES**

Size, 4 x 12 x 12.    Weight, 45 lbs.    35 cents each, net.

**GUTTER TILE**

Size, 4 x 8 x 12.    Weight, 20 lbs.    5 cts. foot, net.

## RING PIPE AND RINGS



Ring Pipe with Rings, same list as Standard Sewer Pipe. With out Rings, an additional ten per cent. allowed off bill. Rings sold without Pipe at the following list prices and subject to the regular discount.

Discount is governed by the size of the Pipe for which the Ring is intended, not by the size of the Pipe used, or the Ring itself.

Rings for	3"	Pipe—5"	Pipe used.....	12½
"	"	4"	6"	15
"	"	5"	8"	25
"	"	6"	9"	30
"	"	8"	10"	37½
"	"	9"	12"	50
"	"	10"	13"	60
"	"	12"	15"	67½
"	"	15"	18"	85
"	"	18"	22"	1 37½
"	"	20"	24"	1 62½
"	"	21"	25"	1 80
"	"	22"	27"	2 00
"	"	24"	28"	2 25
"	"	27"	33"	3 12½
"	"	30"	36"	3 50

## SLOP BOWLS, CELLAR AND GREASE TRAPS, HOPPERS AND STRAINERS



### SLOP AND CLOSET BOWLS

EACH WITH OR WITHOUT STRAINERS

12 x 6 .....	\$3 50	15 x 6 .....	\$5 00
12 x 4 .....	3 50	15 x 4 .....	5 00

### CELLAR TRAPS

9 x 4 with bottom.....	\$6 00	Without bottom.....	\$5 00
12 x 4 " " .....	9 00	" " .....	6 00

### GREASE TRAPS

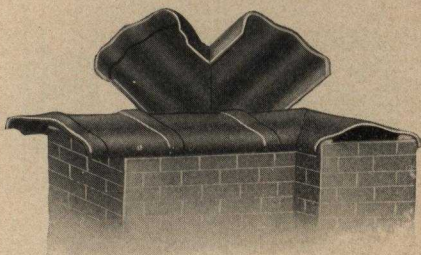
8 inch, with bottom and cover.....	\$ 6 60
10 " " " " " .....	9 60
12 " " " " " .....	12 00
15 " " " " " .....	16 20
18 " " " " " .....	20 40

### HOPPERS AND STRAINERS

Top, 15 in. Bottom, 4 in. ....	With Strainer, price each, \$5 00
Top, 15 in. Bottom, 6 in. ....	With Strainer, price each, \$5 00



## VITRIFIED WALL COPING



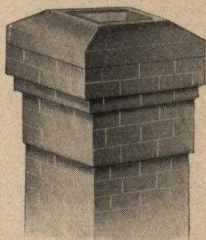
PRICE LIST

Width Inches	Price per foot	Corners each	Angles each	Closed Ends each	Wt. per ft. lbs.
8 and 9	\$0 40	\$1 20	\$1 20	\$1 20	12
12 and 13	60	1 80	1 80	1 80	17
18	1 20	3 60	3 60	3 60	30

Regular lengths of 2 feet shipped unless otherwise ordered. We also carry 4, 6, 8, 10, 12, 16 and 18 inch lengths in stock, so as to cover any length of wall without cutting. Where a stock is not carried, please state lengths desired, or send us sketch of wall to be covered and we will ship sizes to fit.

The salt-glazed, vitrified, fire clay Coping is admittedly the best covering for exposed walls.

## CHIMNEY COPING



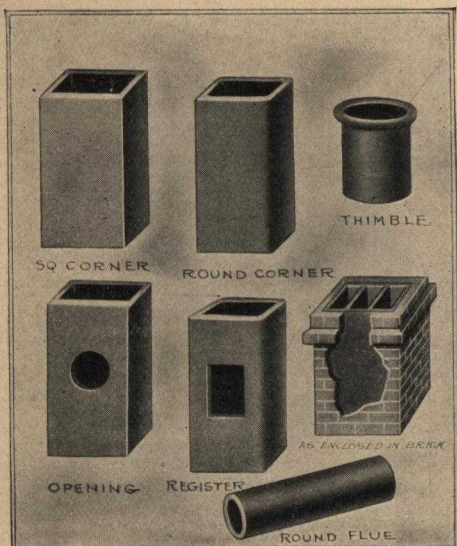
SIZES AND PRICES

16 x 16 inches....	\$2 50	18 x 22 inches....	\$3 00
16 x 20    "     ....	3 00	20 x 20    "     ....	3 50
18 x 18    "     ....	2 50	22 x 22    "     ....	3 50

Special sizes made to order.

Our Chimney Coping is made from fire clay, and gives to a chimney an air of durability which is impossible to secure with a perishable substance like iron.

They will not rust or deface a chimney.



## FIRE CLAY FLUE LININGS

SQUARE OR ROUND CORNERS

In 2 ft. Lengths—Outside Measure.

SIZE	WEIGHT	NO. FT. IN MINIMUM CARLOAD	PER FT
4½ x 8½ in.....	14 lbs.....	1800.....	\$0 30
4½ x 13 in.....	19 lbs.....	1300.....	45
4½ x 18 in.....	40 lbs.....	600.....	1 00
6 x 12 in.....	22 lbs.....	1100.....	50
6 x 16 in.....	24 lbs.....	1000.....	75
7½ x 7½ in.....	15 lbs.....	1600.....	35
8½ x 8½ in.....	18 lbs.....	1300.....	45
8½ x 13 in.....	28 lbs.....	1000.....	65
8½ x 18 in.....	45 lbs.....	550.....	90
13 x 13 in.....	40 lbs.....	600.....	85
13 x 18 in.....	57 lbs.....	450.....	1 20
14 x 16 in.....	50 lbs.....	500.....	1 10
18 x 18 in.....	75 lbs.....	320.....	2 00

Openings and Registers, 50 per cent. added.

## ROUND FLUE LININGS

WITHOUT SOCKETS—2 FT. LENGTHS

Inside Measure	Price per Foot	Inside Measure	Price per Foot
6 inch	\$0 30	20 inch	\$2 25
7 "	38	22 "	2 75
8 "	45	24 "	3 25
9 "	55	27 "	4 25
10 "	65	30 "	5 50
12 "	85	33 "	6 25
15 "	1 25	36 "	7 00
18 "	1 70		

Openings four times price of one foot straight pipe.




## FIRE CLAY STOVE THIMBLES

LIST PRICE—EACH

Calibre	LENGTH				
	4½"	6"	8"	10"	12"
4	17	22	..	..	..
5	20	25	35	40	45
6	25	35	40	45	50
7	30	40	45	50	60
8	35	45	55	60	70
9	40	50	60	70	80
10	45	55	65	75	85
12	55	65	75	85	1 00

Made ¼" larger than calibre to receive stove pipe.

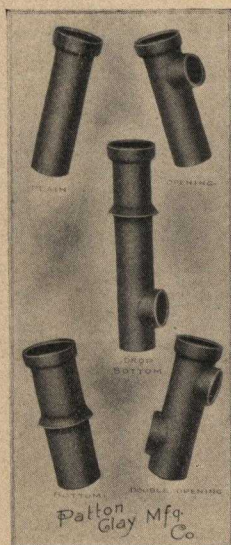
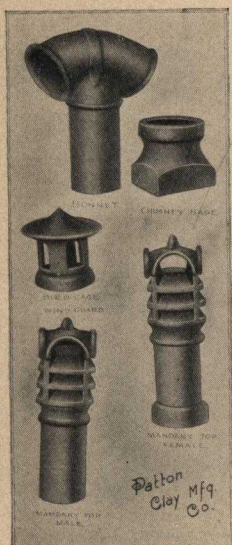
 UR Flue Linings, encased in a four-inch brick wall, make the best and safest chimney that can be built, and is, at the same time, much cheaper than an 8-inch wall or brick partitioned chimney without linings.

Further, the lining gives a practically smooth surface inside, with only one horizontal joint every two feet, as compared to the many joints and roughness of the inside of the ordinary brick flue.

The rounded corners cut out dead air spaces, and it is safe to say, considering all the advantages, that the efficiency of the chimney is increased from 50% to 100%, while the danger from fires caused by defective flues is entirely removed.

The following table gives the number of standard size brick in one course of 4-inch wall encasing one or more linings in the chimney; by multiplying the number of brick in one course, as shown by the table, by 4½ (the number of courses for each foot in height) and the result by the desired height for the chimney, you obtain the number of brick required:

Inside Size Chimney	1 Lining enclosed	2 Linings enclosed	3 Linings enclosed	4 Linings enclosed	5 Linings enclosed	6 Linings enclosed
4½x8½	5	6	7	8	9	9
4½x13	6	7	8	9	10	11
4½x18	7	8	9	10	11	12
8½x8½	6	8	10	10	12	12
8½x13	7	9	11	13	..	..
8½x18	8	10	12	14	..	..
13 x13	8	11	14	14	..	..
13 x18	9	12	15	18	..	..
18 x18	10	14	18	18	..	..



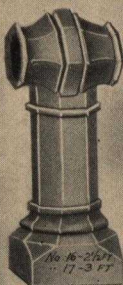
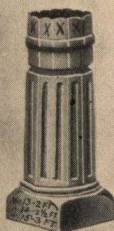


## PRICE LIST OF FIRE CLAY STOVE PIPE AND FITTINGS

Calibre Inside Inches	Plain per foot	Bonnetts 2 feet long	Bottoms 2 feet long	Openings Single, 2 feet long	Openings Double, 2 feet long	Openings Single, Closed Ends, 2 ft. long	Drop Bottoms 3 ft. long	Elbows	Mandary Tops	Wind- guard Bonnetts without Hoods	Bird Cages	Chimney Bases
		EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH
5	\$0 35	\$1 40	\$1 05	\$1 05	\$1 40	\$1 40	\$2 10	\$1 40	.....	\$1 40	\$1 50	.....
6	40	1 60	1 20	1 20	1 60	1 60	2 40	1 60	\$2 50	1 60	2 50	\$2 00
7	50	2 00	1 50	1 50	2 00	2 00	3 00	2 00	3 00	2 00	3 00	2 50
8	60	2 40	1 80	1 80	2 40	2 40	3 60	2 40	3 60	2 40	3 60	3 00
9	70	2 80	2 10	2 10	2 80	2 80	4 20	2 80	.....	.....	.....	.....
10	85	3 40	2 55	2 55	3 40	3 40	5 10	3 40	.....	.....	.....	.....
12	1 10	4 40	3 30	3 30	4 40	4 40	6 60	4 40	.....	.....	.....	.....
15	1 50	.....	4 50	4 50	6 00	.....	.....	6 00	.....	.....	.....	.....
18	1 80	.....	5 40	5 40	7 20	.....	.....	7 20	.....	.....	10 00	.....
20	2 50	.....	7 50	7 50	10 00	.....	.....	10 00	.....	.....	.....	.....
21	2 75	.....	8 25	8 25	11 00	.....	.....	.....	.....	.....	.....	.....
22	3 00	.....	9 00	9 00	12 00	.....	.....	.....	.....	.....	.....	.....
24	3 50	.....	10 50	10 50	14 00	.....	.....	.....	.....	.....	.....	.....
27	4 25	.....	.....	12 75	17 00	.....	.....	.....	.....	.....	.....	.....
30	5 50	.....	.....	16 50	22 00	.....	.....	.....	.....	.....	.....	.....
33	6 25	.....	.....	18 75	25 00	.....	.....	.....	.....	.....	.....	.....
36	7 00	.....	.....	21 00	28 00	.....	.....	.....	.....	.....	.....	.....

Additional lengths charged in proportion. Bottoms, Closed Ends or Flanges added, each to be charged 1 foot of pipe of the same size. Chimney Bases 18 inches high or under, to be the price of 5 feet of pipe of size of bowl; over 18 inches in height, the additional length to be charged. Fifty per cent. additional to be charged for Hooded Windguard Bonnetts.

Discounts governing prices on 5-inch to 24-inch inclusive will not apply to 27-inch to 36-inch inclusive.

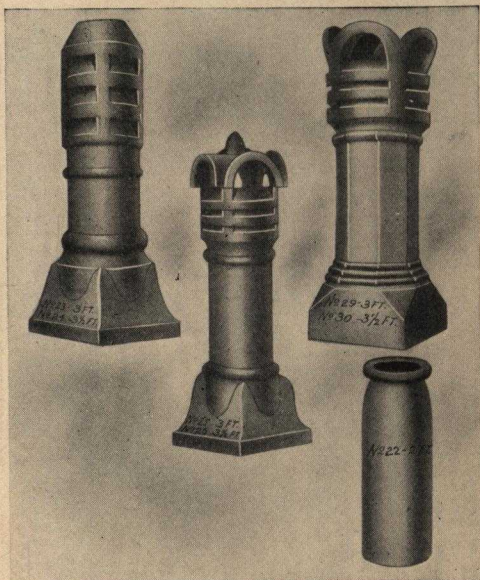


PATTON  
GLAY M.F.G.  
GO





## CHIMNEY TOPS

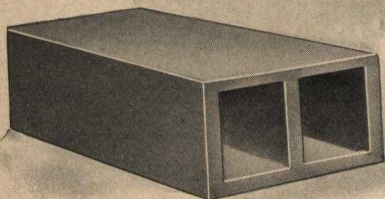
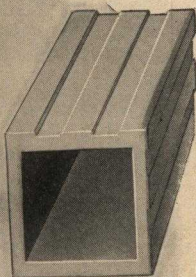
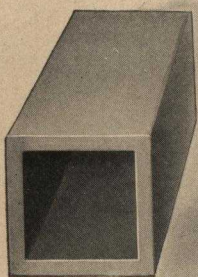
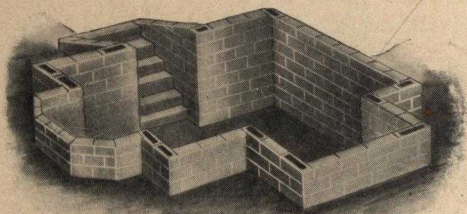


## PRICE LIST CHIMNEY TOPS

No	BASE		Price	No	BASE		Price
	Shape	Size			Shape	Size	
1	R'nd	13"	\$2 25	15	Sq.	13x13	\$3 50
2	"	"	2 75	16	"	"	3 25
3	"	"	3 50	17	"	"	4 00
4	Sq.	13x13	2 25	18	Rec.	12x16	2 25
5	"	"	2 75	19	"	"	2 75
6	"	"	3 50	20	"	"	3 25
7	"	"	2 25	21	Sq.	13x13	2 00
8	"	"	2 75	22	R'nd	10"	2 00
9	"	"	3 25	23	"	13"	4 25
10	Oct.	13"	2 00	24	"	"	5 00
11	"	"	2 50	25	Sq.	13x13	5 75
12	"	"	3 25	26	"	"	6 50
13	Sq.	13x13	2 25	29	"	"	5 75
14	"	"	2 75	30	"	"	6 50

Write for discounts.

## IMPERMEABLE VITRIFIED BUILDING BLOCKS



8 x 10 x 16

8 x 12 x 16

Size 8 x 8 x 16

Weight 34 pounds

Size 8 x 10 x 16

Weight 50 pounds

Size 8 x 12 x 16—Weight 54 pounds.

Each Block or Corner measures about 144 square inches when laid in the wall.

Corner Blocks same price as Plain Blocks.

Octagon or Bow Window Blocks three times price Plain Blocks.



Size	Description	List	45 %	46 %	47 %	48 %
<b>2 AND 3</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	\$ .20 .80 .60		\$ .10 $\frac{1}{2}$ .43 $\frac{1}{2}$ .32 $\frac{1}{2}$	\$ .10 $\frac{3}{4}$ .42 $\frac{1}{2}$ .31 $\frac{1}{2}$	\$ .10 $\frac{3}{4}$ .41 $\frac{1}{2}$ .31 $\frac{1}{2}$
<b>4</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.25 1.00 .75		.13 $\frac{1}{2}$ .54 .40 $\frac{1}{2}$	.13 $\frac{1}{4}$ .53 .39 $\frac{3}{4}$	.13 .52 .39
<b>5</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.30 1.20 .90		.16 $\frac{1}{2}$ .64 $\frac{1}{2}$ .48 $\frac{1}{2}$	.15 $\frac{9}{10}$ .63 $\frac{1}{2}$ .47 $\frac{7}{10}$	.15 $\frac{3}{4}$ .62 $\frac{1}{2}$ .46 $\frac{1}{2}$
<b>6</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.40 1.60 1.20		.21 $\frac{3}{4}$ .86 $\frac{1}{2}$ .64 $\frac{1}{2}$	.21 $\frac{1}{2}$ .84 $\frac{1}{2}$ .63 $\frac{1}{2}$	.20 $\frac{1}{2}$ .83 $\frac{1}{2}$ .62 $\frac{1}{2}$
<b>8</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.55 2.20 1.65		.29 $\frac{7}{10}$ 1.18 $\frac{1}{2}$ .89 $\frac{1}{10}$	.29 $\frac{3}{10}$ 1.16 $\frac{1}{2}$ .87 $\frac{3}{10}$	.28 $\frac{3}{4}$ 1.14 $\frac{1}{2}$ .85 $\frac{1}{2}$
<b>9</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.65 2.60 1.95		.35 $\frac{1}{10}$ 1.40 $\frac{1}{2}$ 1.05 $\frac{3}{10}$	.34 $\frac{9}{10}$ 1.37 $\frac{1}{2}$ 1.03 $\frac{7}{10}$	.33 $\frac{1}{2}$ 1.35 $\frac{1}{2}$ 1.01 $\frac{3}{4}$
<b>10</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.80 3.20 2.40		.43 $\frac{1}{2}$ 1.72 $\frac{1}{2}$ 1.29 $\frac{1}{2}$	.42 $\frac{1}{2}$ 1.69 $\frac{1}{2}$ 1.27 $\frac{1}{2}$	.41 $\frac{3}{4}$ 1.66 $\frac{1}{2}$ 1.24 $\frac{1}{2}$
<b>12</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	1.00 4.00 3.00		.54 2.16 1.62	.53 2.12 1.59	.52 2.08 1.56
<b>15</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	1.35 5.40 4.05		.72 $\frac{9}{10}$ 2.91 $\frac{1}{2}$ 2.18 $\frac{7}{10}$	.71 $\frac{11}{10}$ 2.86 $\frac{1}{2}$ 2.14 $\frac{1}{2}$	.70 $\frac{1}{2}$ 2.80 $\frac{1}{2}$ 2.10 $\frac{3}{4}$
<b>18</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	1.90 7.60 5.70		1.02 $\frac{3}{4}$ 4.10 $\frac{1}{2}$ 3.07 $\frac{1}{2}$	1.00 $\frac{7}{10}$ 4.02 $\frac{1}{2}$ 3.02 $\frac{1}{10}$	.98 $\frac{1}{2}$ 3.95 $\frac{1}{2}$ 2.96 $\frac{1}{2}$
<b>20</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	2.25 9.00 6.75		1.21 $\frac{1}{2}$ 4.86 3.64 $\frac{1}{2}$	1.19 $\frac{1}{4}$ 4.77 3.57 $\frac{3}{4}$	1.17 4.68 3.51
<b>21</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	2.70 10.80 8.10		1.45 $\frac{1}{2}$ 5.83 $\frac{1}{2}$ 4.37 $\frac{1}{2}$	1.43 $\frac{1}{10}$ 5.72 $\frac{1}{2}$ 4.29 $\frac{3}{10}$	1.40 $\frac{1}{2}$ 5.61 $\frac{1}{2}$ 4.21 $\frac{1}{2}$
<b>22</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	3.00 12.00 9.00		1.62 6.48 4.86	1.59 6.36 4.77	1.56 6.24 4.68
<b>24</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	3.25 13.00 9.75		1.75 $\frac{1}{2}$ 7.02 5.26 $\frac{1}{2}$	1.72 $\frac{1}{4}$ 6.89 5.16 $\frac{3}{4}$	1.69 6.76 5.07
<b>27</b> Inch	Pipe, per foot Ys or Ts 2 $\frac{1}{2}$ feet long Inlet less than 15 in.) Curves or Elbows	4.50 22.50 13.50		2.43 12.15 7.29	2.38 $\frac{1}{2}$ 11.92 $\frac{1}{2}$ 7.15 $\frac{1}{2}$	2.34 11.70 7.02
<b>30</b> Inch	Pipe, per foot Ys or Ts 2 $\frac{1}{2}$ feet long Inlet less than 15 in.) Curves or Elbows	5.50 27.50 16.50		2.97 14.85 8.91	2.91 $\frac{1}{2}$ 14.57 $\frac{1}{2}$ 8.74 $\frac{1}{2}$	2.86 14.30 8.58
<b>33</b> Inch	Pipe, per foot Ys or Ts 2 $\frac{1}{2}$ feet long Curves or Elbows	6.25 31.25 18.75	3.43 $\frac{3}{4}$ 17.18 $\frac{3}{4}$ 10.31 $\frac{1}{4}$	3.37 $\frac{1}{2}$ 16.87 $\frac{1}{2}$ 10.12 $\frac{1}{2}$	3.31 $\frac{1}{4}$ 16.56 $\frac{1}{4}$ 9.93 $\frac{3}{4}$	3.25 16.25 9.75
<b>36</b> Inch	Pipe, per foot Ys or Ts 2 $\frac{1}{2}$ feet long Curves or Elbows	7.00 35.00 21.00	3.85 19.25 11.55	3.78 18.90 11.34	3.71 18.55 11.13	3.64 18.20 10.92

50 % additional for Y and T Inlets, 15-inch and larger, on any size Pipe.

## Net Prices of Pipe and Fittings at Various Discounts

Size	Description	49 %	50 %	51 %	52 %	53 %
<b>2 <math>\frac{3}{4}</math></b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	\$ .10 $\frac{1}{5}$ .40 $\frac{3}{8}$ .30 $\frac{3}{8}$	\$ .10 .40 .30	\$ .09 $\frac{4}{5}$ .39 $\frac{1}{2}$ .29 $\frac{3}{8}$	\$ .09 $\frac{3}{5}$ .38 $\frac{3}{8}$ .28 $\frac{3}{8}$	\$ .09 $\frac{2}{5}$ .37 $\frac{3}{8}$ .28 $\frac{1}{5}$
<b>4</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.12 $\frac{3}{4}$ .51 .38 $\frac{1}{4}$	.12 $\frac{1}{2}$ .50 .37 $\frac{1}{2}$	.12 $\frac{1}{4}$ .49 .36 $\frac{3}{4}$	.12 .48 .36	.11 $\frac{3}{4}$ .47 .35 $\frac{1}{4}$
<b>5</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.15 $\frac{3}{10}$ .61 $\frac{1}{2}$ .45 $\frac{9}{10}$	.15 .60 .45	.14 $\frac{7}{10}$ .58 $\frac{4}{5}$ .44 $\frac{7}{10}$	.14 $\frac{3}{5}$ .57 $\frac{3}{5}$ .43 $\frac{3}{5}$	.14 $\frac{1}{10}$ .56 $\frac{2}{5}$ .42 $\frac{3}{10}$
<b>6</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.20 $\frac{2}{5}$ .81 $\frac{3}{5}$ .61 $\frac{1}{5}$	.20 .80 .60	.19 $\frac{3}{5}$ .78 $\frac{2}{5}$ .58 $\frac{4}{5}$	.19 $\frac{1}{5}$ .76 $\frac{1}{5}$ .57 $\frac{3}{5}$	.18 $\frac{4}{5}$ .75 $\frac{1}{5}$ .56 $\frac{2}{5}$
<b>8</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.28 $\frac{1}{20}$ 1.12 $\frac{1}{5}$ .84 $\frac{3}{20}$	.27 $\frac{1}{2}$ 1.10 .82 $\frac{1}{2}$	.26 $\frac{13}{20}$ 1.07 $\frac{1}{5}$ .80 $\frac{17}{20}$	.26 $\frac{2}{5}$ 1.05 $\frac{2}{5}$ .79 $\frac{1}{5}$	.25 $\frac{17}{20}$ 1.03 $\frac{1}{5}$ .77 $\frac{17}{20}$
<b>9</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.33 $\frac{3}{20}$ 1.32 $\frac{3}{5}$ .99 $\frac{3}{20}$	.32 $\frac{1}{2}$ 1.30 .97 $\frac{1}{2}$	.31 $\frac{17}{20}$ 1.27 $\frac{2}{5}$ .95 $\frac{17}{20}$	.31 $\frac{1}{5}$ 1.24 $\frac{4}{5}$ .93 $\frac{1}{5}$	.30 $\frac{11}{20}$ 1.22 $\frac{1}{5}$ .91 $\frac{17}{20}$
<b>10</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.40 $\frac{4}{5}$ 1.63 $\frac{1}{5}$ 1.22 $\frac{2}{5}$	.40 1.60 1.20	.39 $\frac{1}{5}$ 1.56 $\frac{4}{5}$ 1.17 $\frac{2}{5}$	.38 $\frac{2}{5}$ 1.53 $\frac{3}{5}$ 1.15 $\frac{2}{5}$	.37 $\frac{3}{5}$ 1.50 $\frac{2}{5}$ 1.12 $\frac{3}{5}$
<b>12</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.51 2.04 1.53	.50 2.00 1.50	.49 1.96 1.47	.48 1.92 1.44	.47 1.88 1.41
<b>15</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.68 $\frac{17}{20}$ 2.75 $\frac{3}{5}$ 2.06 $\frac{11}{20}$	.67 $\frac{1}{2}$ 2.70 2.02 $\frac{1}{2}$	.66 $\frac{3}{20}$ 2.64 $\frac{3}{5}$ 1.98 $\frac{9}{20}$	.64 $\frac{4}{5}$ 2.59 $\frac{1}{5}$ 1.94 $\frac{3}{5}$	.63 $\frac{9}{20}$ 2.53 $\frac{4}{5}$ 1.90 $\frac{7}{20}$
<b>18</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.96 $\frac{9}{10}$ 3.87 $\frac{3}{5}$ 2.90 $\frac{7}{10}$	.95 3.80 2.85	.93 $\frac{1}{10}$ 3.72 $\frac{2}{5}$ 2.79 $\frac{9}{10}$	.91 $\frac{1}{5}$ 3.64 $\frac{4}{5}$ 2.73 $\frac{3}{5}$	.89 $\frac{3}{10}$ 3.57 $\frac{1}{5}$ 2.67 $\frac{9}{10}$
<b>20</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	1.14 $\frac{3}{4}$ 4.59 3.44 $\frac{1}{4}$	1.12 $\frac{1}{2}$ 4.50 3.37 $\frac{1}{2}$	1.10 $\frac{1}{4}$ 4.41 3.30 $\frac{3}{4}$	1.08 4.32 3.24	1.05 $\frac{3}{4}$ 4.23 3.17 $\frac{1}{4}$
<b>21</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	1.37 $\frac{7}{10}$ 5.50 $\frac{4}{5}$ 4.13 $\frac{1}{10}$	1.35 5.40 4.05	1.32 $\frac{3}{10}$ 5.29 $\frac{1}{5}$ 3.96 $\frac{9}{10}$	1.29 $\frac{2}{5}$ 5.18 $\frac{2}{5}$ 3.88 $\frac{4}{5}$	1.26 $\frac{9}{10}$ 5.07 $\frac{2}{5}$ 3.80 $\frac{7}{10}$
<b>22</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	1.53 6.12 4.59	1.50 6.00 4.50	1.47 5.88 4.41	1.44 5.76 4.32	1.41 5.64 4.23
<b>24</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	1.65 $\frac{3}{4}$ 6.63 4.97 $\frac{1}{4}$	1.62 $\frac{1}{2}$ 6.50 4.87 $\frac{1}{2}$	1.59 $\frac{1}{4}$ 6.37 4.77 $\frac{3}{4}$	1.56 6.24 4.68	1.52 $\frac{1}{2}$ 6.11 4.58 $\frac{1}{4}$
<b>27</b> Inch	Pipe, per foot Ys or Ts 2 $\frac{1}{2}$ feet long Inlet less than 15 in.) Curves or Elbows	2.29 $\frac{1}{2}$ 11.47 $\frac{1}{2}$ 6.88 $\frac{1}{2}$	2.25 11.25 6.75	2.20 $\frac{1}{2}$ 11.02 $\frac{1}{2}$ 6.61 $\frac{1}{2}$	2.16 10.80 6.48	2.11 $\frac{1}{2}$ 10.57 $\frac{1}{2}$ 6.34 $\frac{1}{2}$
<b>30</b> Inch	Pipe, per foot Ys or Ts 2 $\frac{1}{2}$ feet long Inlet less than 15 in.) Curves or Elbows	2.80 $\frac{1}{2}$ 14.02 $\frac{1}{2}$ 8.41 $\frac{1}{2}$	2.75 13.75 8.25	2.69 $\frac{1}{2}$ 13.47 $\frac{1}{2}$ 8.08 $\frac{1}{2}$	2.64 13.20 7.92	2.58 $\frac{1}{2}$ 12.92 $\frac{1}{2}$ 7.75 $\frac{1}{2}$
<b>33</b> Inch	Pipe, per foot Ys or Ts 2 $\frac{1}{2}$ feet long Curves or Elbows	3.18 $\frac{3}{4}$ 15.93 $\frac{3}{4}$ 9.56 $\frac{1}{4}$	3.12 $\frac{1}{2}$ 15.62 $\frac{1}{2}$ 9.37 $\frac{1}{2}$	3.06 $\frac{1}{4}$ 15.31 $\frac{1}{4}$ 9.18 $\frac{3}{4}$	3.00 15.00 9.00	2.93 $\frac{3}{4}$ 14.68 $\frac{3}{4}$ 8.81 $\frac{1}{4}$
<b>36</b> Inch	Pipe, per foot Ys or Ts 2 $\frac{1}{2}$ feet long Curves or Elbows	3.57 17.85 10.71	3.50 17.50 10.50	3.43 17.15 10.29	3.36 16.80 10.08	3.29 16.45 9.87

50 % additional for Y and T Inlets, 15-inch and larger, on any size Pipe.



54 %	55 %	56 %	57 %	58 %	59 %	60 %	61 %	Size
$\frac{.091}{.36\frac{1}{2}}$ $\frac{.27}{.091}$	$\frac{.09}{.36}$ $\frac{.27}{.09}$	$\frac{.08\frac{1}{2}}{.35\frac{1}{2}}$ $\frac{.26\frac{1}{2}}{.08\frac{1}{2}}$	$\frac{.08\frac{1}{2}}{.34\frac{1}{2}}$ $\frac{.25\frac{1}{2}}{.08\frac{1}{2}}$	$\frac{.08\frac{1}{2}}{.33\frac{1}{2}}$ $\frac{.25\frac{1}{2}}{.08\frac{1}{2}}$	$\frac{.08\frac{1}{2}}{.32\frac{1}{2}}$ $\frac{.24\frac{1}{2}}{.08\frac{1}{2}}$	$\frac{.08}{.32}$ $\frac{.24}{.08}$	$\frac{.07\frac{1}{2}}{.31\frac{1}{2}}$ $\frac{.23\frac{1}{2}}{.07\frac{1}{2}}$	<b>2 AND 3</b> Inch
$\frac{.11\frac{1}{2}}{.46}$ $\frac{.34\frac{1}{2}}{.11\frac{1}{2}}$	$\frac{.11\frac{3}{4}}{.45}$ $\frac{.33\frac{3}{4}}{.11\frac{3}{4}}$	$\frac{.11}{.44}$ $\frac{.33}{.11}$	$\frac{.10\frac{3}{4}}{.43}$ $\frac{.32\frac{3}{4}}{.10\frac{3}{4}}$	$\frac{.10\frac{1}{2}}{.42}$ $\frac{.31\frac{1}{2}}{.10\frac{1}{2}}$	$\frac{.10\frac{1}{4}}{.41}$ $\frac{.30\frac{1}{4}}{.10\frac{1}{4}}$	$\frac{.10}{.40}$ $\frac{.30}{.10}$	$\frac{.09\frac{3}{4}}{.39}$ $\frac{.29\frac{3}{4}}{.09\frac{3}{4}}$	<b>4</b> Inch
$\frac{.13\frac{1}{2}}{.55\frac{1}{2}}$ $\frac{.41\frac{1}{2}}{.13\frac{1}{2}}$	$\frac{.13\frac{1}{2}}{.54}$ $\frac{.40\frac{1}{2}}{.13\frac{1}{2}}$	$\frac{.13\frac{1}{2}}{.52\frac{1}{2}}$ $\frac{.39\frac{1}{2}}{.13\frac{1}{2}}$	$\frac{.12\frac{9}{10}}{.51\frac{9}{10}}$ $\frac{.38\frac{9}{10}}{.12\frac{9}{10}}$	$\frac{.12\frac{3}{5}}{.50\frac{3}{5}}$ $\frac{.37\frac{3}{5}}{.12\frac{3}{5}}$	$\frac{.12\frac{3}{10}}{.49\frac{3}{10}}$ $\frac{.36\frac{3}{10}}{.12\frac{3}{10}}$	$\frac{.12}{.48}$ $\frac{.36}{.12}$	$\frac{.11\frac{7}{10}}{.46\frac{7}{10}}$ $\frac{.35\frac{7}{10}}{.11\frac{7}{10}}$	<b>5</b> Inch
$\frac{.18\frac{2}{3}}{.73\frac{2}{3}}$ $\frac{.55\frac{2}{3}}{.18\frac{2}{3}}$	$\frac{.18}{.72}$ $\frac{.54}{.18}$	$\frac{.17\frac{2}{3}}{.70\frac{2}{3}}$ $\frac{.52\frac{2}{3}}{.17\frac{2}{3}}$	$\frac{.17\frac{1}{3}}{.68\frac{1}{3}}$ $\frac{.51\frac{1}{3}}{.17\frac{1}{3}}$	$\frac{.16\frac{2}{3}}{.67\frac{2}{3}}$ $\frac{.50\frac{2}{3}}{.16\frac{2}{3}}$	$\frac{.16\frac{1}{3}}{.65\frac{1}{3}}$ $\frac{.49\frac{1}{3}}{.16\frac{1}{3}}$	$\frac{.16}{.64}$ $\frac{.48}{.16}$	$\frac{.15\frac{2}{3}}{.62\frac{2}{3}}$ $\frac{.46\frac{2}{3}}{.15\frac{2}{3}}$	<b>6</b> Inch
$\frac{.25\frac{3}{10}}{1.01\frac{3}{10}}$ $\frac{.75\frac{3}{10}}{.25\frac{3}{10}}$	$\frac{.24\frac{3}{4}}{.99}$ $\frac{.74\frac{3}{4}}{.24\frac{3}{4}}$	$\frac{.24\frac{1}{2}}{.96\frac{1}{2}}$ $\frac{.72\frac{1}{2}}{.24\frac{1}{2}}$	$\frac{.23\frac{1}{2}}{.94\frac{1}{2}}$ $\frac{.70\frac{1}{2}}{.23\frac{1}{2}}$	$\frac{.23\frac{1}{10}}{.92\frac{1}{10}}$ $\frac{.69\frac{1}{10}}{.23\frac{1}{10}}$	$\frac{.22\frac{1}{2}}{.90\frac{1}{2}}$ $\frac{.67\frac{1}{2}}{.22\frac{1}{2}}$	$\frac{.22}{.88}$ $\frac{.66}{.22}$	$\frac{.21\frac{9}{10}}{.85\frac{9}{10}}$ $\frac{.64\frac{9}{10}}{.21\frac{9}{10}}$	<b>8</b> Inch
$\frac{.29\frac{9}{10}}{1.19\frac{9}{10}}$ $\frac{.89\frac{9}{10}}{.29\frac{9}{10}}$	$\frac{.29\frac{1}{4}}{1.17}$ $\frac{.87\frac{3}{4}}{.29\frac{1}{4}}$	$\frac{.28\frac{3}{5}}{1.14\frac{3}{5}}$ $\frac{.85\frac{3}{5}}{.28\frac{3}{5}}$	$\frac{.27\frac{1}{2}}{1.11\frac{1}{2}}$ $\frac{.83\frac{1}{2}}{.27\frac{1}{2}}$	$\frac{.27\frac{3}{10}}{1.09\frac{3}{10}}$ $\frac{.81\frac{3}{10}}{.27\frac{3}{10}}$	$\frac{.26\frac{1}{2}}{1.06\frac{1}{2}}$ $\frac{.79\frac{1}{2}}{.26\frac{1}{2}}$	$\frac{.26}{1.04}$ $\frac{.78}{.26}$	$\frac{.25\frac{7}{10}}{1.01\frac{7}{10}}$ $\frac{.76\frac{7}{10}}{.25\frac{7}{10}}$	<b>9</b> Inch
$\frac{.36\frac{1}{2}}{1.47\frac{1}{2}}$ $\frac{1.10\frac{1}{2}}{.36\frac{1}{2}}$	$\frac{.36}{1.44}$ $\frac{1.08}{.36}$	$\frac{.35\frac{1}{2}}{1.40\frac{1}{2}}$ $\frac{1.05\frac{1}{2}}{.35\frac{1}{2}}$	$\frac{.34\frac{1}{2}}{1.37\frac{1}{2}}$ $\frac{1.03\frac{1}{2}}{.34\frac{1}{2}}$	$\frac{.33\frac{1}{2}}{1.34\frac{1}{2}}$ $\frac{1.00\frac{1}{2}}{.33\frac{1}{2}}$	$\frac{.32\frac{1}{2}}{1.31\frac{1}{2}}$ $\frac{.98\frac{1}{2}}{.32\frac{1}{2}}$	$\frac{.32}{1.28}$ $\frac{.96}{.32}$	$\frac{.31\frac{1}{2}}{1.24\frac{1}{2}}$ $\frac{.93\frac{1}{2}}{.31\frac{1}{2}}$	<b>10</b> Inch
$\frac{.46}{1.84}$ $\frac{1.38}{.46}$	$\frac{.45}{1.80}$ $\frac{1.35}{.45}$	$\frac{.44}{1.76}$ $\frac{1.32}{.44}$	$\frac{.43}{1.72}$ $\frac{1.29}{.43}$	$\frac{.42}{1.68}$ $\frac{1.26}{.42}$	$\frac{.41}{1.64}$ $\frac{1.23}{.41}$	$\frac{.40}{1.60}$ $\frac{1.20}{.40}$	$\frac{.39}{1.56}$ $\frac{1.17}{.39}$	<b>12</b> Inch
$\frac{.62\frac{1}{10}}{2.48\frac{1}{10}}$ $\frac{1.86\frac{1}{10}}{.62\frac{1}{10}}$	$\frac{.60\frac{3}{4}}{2.43}$ $\frac{1.82\frac{3}{4}}{.60\frac{3}{4}}$	$\frac{.59\frac{2}{5}}{2.37\frac{2}{5}}$ $\frac{1.78\frac{2}{5}}{.59\frac{2}{5}}$	$\frac{.58\frac{1}{2}}{2.32\frac{1}{2}}$ $\frac{1.74\frac{1}{2}}{.58\frac{1}{2}}$	$\frac{.56\frac{7}{10}}{2.26\frac{7}{10}}$ $\frac{1.70\frac{7}{10}}{.56\frac{7}{10}}$	$\frac{.55\frac{2}{5}}{2.21\frac{2}{5}}$ $\frac{1.66\frac{2}{5}}{.55\frac{2}{5}}$	$\frac{.54}{2.16}$ $\frac{1.62}{.54}$	$\frac{.52\frac{3}{5}}{2.10\frac{3}{5}}$ $\frac{1.57\frac{3}{5}}{.52\frac{3}{5}}$	<b>15</b> Inch
$\frac{.87\frac{2}{5}}{3.49\frac{2}{5}}$ $\frac{2.62\frac{2}{5}}{.87\frac{2}{5}}$	$\frac{.85\frac{1}{2}}{3.42}$ $\frac{2.56\frac{1}{2}}{.85\frac{1}{2}}$	$\frac{.83\frac{3}{5}}{3.34\frac{3}{5}}$ $\frac{2.50\frac{3}{5}}{.83\frac{3}{5}}$	$\frac{.81\frac{1}{10}}{3.26\frac{1}{10}}$ $\frac{2.45\frac{1}{10}}{.81\frac{1}{10}}$	$\frac{.79\frac{4}{5}}{3.19\frac{4}{5}}$ $\frac{2.39\frac{4}{5}}{.79\frac{4}{5}}$	$\frac{.77\frac{9}{10}}{3.11\frac{9}{10}}$ $\frac{2.33\frac{9}{10}}{.77\frac{9}{10}}$	$\frac{.76}{3.04}$ $\frac{2.28}{.76}$	$\frac{.74\frac{1}{10}}{2.96\frac{1}{10}}$ $\frac{2.22\frac{1}{10}}{.74\frac{1}{10}}$	<b>18</b> Inch
$\frac{1.03\frac{1}{2}}{4.14}$ $\frac{3.10\frac{1}{2}}{1.03\frac{1}{2}}$	$\frac{1.01\frac{1}{4}}{4.05}$ $\frac{3.03\frac{1}{4}}{1.01\frac{1}{4}}$	$\frac{.99}{3.96}$ $\frac{2.97}{.99}$	$\frac{.96\frac{3}{4}}{3.87}$ $\frac{2.90\frac{3}{4}}{.96\frac{3}{4}}$	$\frac{.94\frac{1}{2}}{3.78}$ $\frac{2.83\frac{1}{2}}{.94\frac{1}{2}}$	$\frac{.92\frac{1}{4}}{3.69}$ $\frac{2.76\frac{1}{4}}{.92\frac{1}{4}}$	$\frac{.90}{3.60}$ $\frac{2.70}{.90}$	$\frac{.87\frac{3}{4}}{3.51}$ $\frac{2.63\frac{3}{4}}{.87\frac{3}{4}}$	<b>20</b> Inch
$\frac{1.24\frac{1}{5}}{4.96\frac{1}{5}}$ $\frac{3.72\frac{1}{5}}{1.24\frac{1}{5}}$	$\frac{1.21\frac{1}{2}}{4.86}$ $\frac{3.64\frac{1}{2}}{1.21\frac{1}{2}}$	$\frac{1.18\frac{4}{5}}{4.75\frac{4}{5}}$ $\frac{3.56\frac{4}{5}}{1.18\frac{4}{5}}$	$\frac{1.16\frac{1}{10}}{4.64\frac{1}{10}}$ $\frac{3.48\frac{1}{10}}{1.16\frac{1}{10}}$	$\frac{1.13\frac{2}{5}}{4.53\frac{2}{5}}$ $\frac{3.40\frac{2}{5}}{1.13\frac{2}{5}}$	$\frac{1.10\frac{7}{10}}{4.42\frac{7}{10}}$ $\frac{3.32\frac{7}{10}}{1.10\frac{7}{10}}$	$\frac{1.08}{4.32}$ $\frac{3.24}{1.08}$	$\frac{1.05\frac{9}{10}}{4.21\frac{9}{10}}$ $\frac{3.15\frac{9}{10}}{1.05\frac{9}{10}}$	<b>21</b> Inch
$\frac{1.38}{5.52}$ $\frac{4.14}{1.38}$	$\frac{1.35}{5.40}$ $\frac{4.05}{1.35}$	$\frac{1.32}{5.28}$ $\frac{3.96}{1.32}$	$\frac{1.29}{5.16}$ $\frac{3.87}{1.29}$	$\frac{1.26}{5.04}$ $\frac{3.78}{1.26}$	$\frac{1.23}{4.92}$ $\frac{3.69}{1.23}$	$\frac{1.20}{4.80}$ $\frac{3.60}{1.20}$	$\frac{1.17}{4.68}$ $\frac{3.51}{1.17}$	<b>22</b> Inch
$\frac{1.49\frac{1}{2}}{5.98}$ $\frac{4.48\frac{1}{2}}{1.49\frac{1}{2}}$	$\frac{1.46\frac{1}{4}}{5.85}$ $\frac{4.38\frac{1}{4}}{1.46\frac{1}{4}}$	$\frac{1.43}{5.72}$ $\frac{4.29}{1.43}$	$\frac{1.39\frac{3}{4}}{5.59}$ $\frac{4.19\frac{3}{4}}{1.39\frac{3}{4}}$	$\frac{1.36\frac{1}{2}}{5.46}$ $\frac{4.09\frac{1}{2}}{1.36\frac{1}{2}}$	$\frac{1.33\frac{1}{4}}{5.33}$ $\frac{3.99\frac{1}{4}}{1.33\frac{1}{4}}$	$\frac{1.30}{5.20}$ $\frac{3.90}{1.30}$	$\frac{1.26\frac{3}{4}}{5.07}$ $\frac{3.80\frac{3}{4}}{1.26\frac{3}{4}}$	<b>24</b> Inch
$\frac{2.07}{10.35}$ $\frac{6.21}{2.07}$	$\frac{2.02\frac{1}{2}}{10.12\frac{1}{2}}$ $\frac{6.07\frac{1}{2}}{2.02\frac{1}{2}}$	$\frac{1.98}{9.90}$ $\frac{5.94}{1.98}$	$\frac{1.93\frac{1}{2}}{9.67\frac{1}{2}}$ $\frac{5.80\frac{1}{2}}{1.93\frac{1}{2}}$	$\frac{1.89}{9.45}$ $\frac{5.67}{1.89}$	$\frac{1.84\frac{1}{2}}{9.22\frac{1}{2}}$ $\frac{5.53\frac{1}{2}}{1.84\frac{1}{2}}$	$\frac{1.80}{9.00}$ $\frac{5.40}{1.80}$	$\frac{1.75\frac{1}{2}}{8.77\frac{1}{2}}$ $\frac{5.26\frac{1}{2}}{1.75\frac{1}{2}}$	<b>27</b> Inch
$\frac{2.53}{12.65}$ $\frac{7.59}{2.53}$	$\frac{2.47\frac{1}{2}}{12.37\frac{1}{2}}$ $\frac{7.42\frac{1}{2}}{2.47\frac{1}{2}}$	$\frac{2.42}{12.10}$ $\frac{7.26}{2.42}$	$\frac{2.36\frac{1}{2}}{11.82\frac{1}{2}}$ $\frac{7.09\frac{1}{2}}{2.36\frac{1}{2}}$	$\frac{2.31}{11.55}$ $\frac{6.93}{2.31}$	$\frac{2.25\frac{1}{2}}{11.27\frac{1}{2}}$ $\frac{6.76\frac{1}{2}}{2.25\frac{1}{2}}$	$\frac{2.20}{11.00}$ $\frac{6.60}{2.20}$	$\frac{2.14\frac{1}{2}}{10.72\frac{1}{2}}$ $\frac{6.43\frac{1}{2}}{2.14\frac{1}{2}}$	<b>30</b> Inch
$\frac{2.87\frac{1}{2}}{14.37\frac{1}{2}}$ $\frac{8.62\frac{1}{2}}{2.87\frac{1}{2}}$	$\frac{2.81\frac{1}{4}}{14.06\frac{1}{4}}$ $\frac{8.43\frac{1}{4}}{2.81\frac{1}{4}}$	$\frac{2.75}{13.75}$ $\frac{8.25}{2.75}$	$\frac{2.68\frac{3}{4}}{13.43\frac{3}{4}}$ $\frac{8.06\frac{3}{4}}{2.68\frac{3}{4}}$	$\frac{2.62\frac{1}{2}}{13.12\frac{1}{2}}$ $\frac{7.87\frac{1}{2}}{2.62\frac{1}{2}}$	$\frac{2.56\frac{1}{4}}{12.81\frac{1}{4}}$ $\frac{7.68\frac{1}{4}}{2.56\frac{1}{4}}$	$\frac{2.50}{12.50}$ $\frac{7.50}{2.50}$	$\frac{2.43\frac{3}{4}}{12.18\frac{3}{4}}$ $\frac{7.31\frac{3}{4}}{2.43\frac{3}{4}}$	<b>33</b> Inch
$\frac{3.22}{16.10}$ $\frac{9.66}{3.22}$	$\frac{3.15}{15.75}$ $\frac{9.45}{3.15}$	$\frac{3.08}{15.40}$ $\frac{9.24}{3.08}$	$\frac{3.01}{15.05}$ $\frac{9.03}{3.01}$	$\frac{2.94}{14.70}$ $\frac{8.82}{2.94}$	$\frac{2.87}{14.35}$ $\frac{8.61}{2.87}$	$\frac{2.80}{14.00}$ $\frac{8.40}{2.80}$	$\frac{2.73}{13.65}$ $\frac{8.19}{2.73}$	<b>36</b> Inch

50 % additional for Y and T Inlets, 15-inch and larger, on any size Pipe.

Size	Description	62 %	63 %	64 %	65 %	66 %
<b>2 AND 3</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	\$.07 $\frac{3}{8}$ .30 $\frac{3}{8}$ .22 $\frac{3}{8}$	\$.07 $\frac{3}{8}$ .29 $\frac{3}{8}$ .22 $\frac{3}{8}$	\$.07 $\frac{1}{2}$ .28 $\frac{3}{8}$ .21 $\frac{3}{8}$	\$.07. .28 .21	\$.06 $\frac{3}{8}$ .27 $\frac{3}{8}$ .20 $\frac{3}{8}$
<b>4</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.09 $\frac{1}{2}$ .38 .28 $\frac{1}{2}$	.09 $\frac{1}{4}$ .37 .27 $\frac{3}{4}$	.09 .36 .27	.08 $\frac{3}{4}$ .35 .26 $\frac{1}{4}$	.08 $\frac{1}{2}$ .34 .25 $\frac{1}{2}$
<b>5</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.11 $\frac{3}{8}$ .45 $\frac{3}{8}$ .34 $\frac{3}{8}$	.11 $\frac{1}{10}$ .44 $\frac{3}{8}$ .33 $\frac{1}{10}$	.10 $\frac{4}{8}$ .43 $\frac{1}{8}$ .32 $\frac{1}{8}$	.10 $\frac{1}{2}$ .42 .31 $\frac{1}{2}$	.10 $\frac{1}{8}$ .40 $\frac{1}{8}$ .30 $\frac{1}{8}$
<b>6</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.15 $\frac{1}{8}$ .60 $\frac{1}{8}$ .45 $\frac{3}{8}$	.14 $\frac{3}{8}$ .59 $\frac{1}{8}$ .44 $\frac{3}{8}$	.14 $\frac{2}{8}$ .57 $\frac{3}{8}$ .43 $\frac{1}{8}$	.14 .56 .42	.13 $\frac{3}{8}$ .54 $\frac{3}{8}$ .40 $\frac{3}{8}$
<b>8</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.20 $\frac{9}{10}$ .83 $\frac{2}{5}$ .62 $\frac{7}{10}$	.20 $\frac{7}{10}$ .81 $\frac{1}{5}$ .61 $\frac{2}{10}$	.19 $\frac{4}{5}$ .79 $\frac{1}{5}$ .59 $\frac{2}{5}$	.19 $\frac{1}{4}$ .77 .57 $\frac{3}{4}$	.18 $\frac{7}{10}$ .74 $\frac{1}{5}$ .56 $\frac{1}{10}$
<b>9</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.24 $\frac{7}{10}$ .98 $\frac{1}{5}$ .74 $\frac{1}{10}$	.24 $\frac{1}{10}$ .96 $\frac{1}{5}$ .72 $\frac{2}{10}$	.23 $\frac{3}{5}$ .93 $\frac{3}{5}$ .70 $\frac{1}{5}$	.22 $\frac{3}{4}$ .91 .68 $\frac{1}{4}$	.22 $\frac{1}{10}$ .88 $\frac{1}{5}$ .66 $\frac{1}{10}$
<b>10</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.30 $\frac{2}{5}$ 1.21 $\frac{1}{5}$ .91 $\frac{1}{5}$	.29 $\frac{3}{5}$ 1.18 $\frac{1}{5}$ .88 $\frac{1}{5}$	.28 $\frac{4}{5}$ 1.15 $\frac{1}{5}$ .86 $\frac{2}{5}$	.28 1.12 .84	.27 $\frac{1}{5}$ 1.08 $\frac{1}{5}$ .81 $\frac{1}{5}$
<b>12</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.38 1.52 1.14	.37 1.48 1.11	.36 1.44 1.08	.35 1.40 1.05	.34 1.36 1.02
<b>15</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.51 $\frac{3}{10}$ 2.05 $\frac{1}{5}$ 1.53 $\frac{3}{10}$	.49 $\frac{2}{10}$ 1.99 $\frac{1}{5}$ 1.49 $\frac{1}{10}$	.48 $\frac{3}{5}$ 1.94 $\frac{2}{5}$ 1.45 $\frac{1}{5}$	.47 $\frac{1}{4}$ 1.89 1.41 $\frac{3}{4}$	.45 $\frac{9}{10}$ 1.83 $\frac{3}{5}$ 1.37 $\frac{7}{10}$
<b>18</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.72 $\frac{1}{5}$ 2.88 $\frac{1}{5}$ 2.16 $\frac{3}{5}$	.70 $\frac{3}{10}$ 2.81 $\frac{1}{5}$ 2.10 $\frac{3}{10}$	.68 $\frac{2}{5}$ 2.73 $\frac{3}{5}$ 2.05 $\frac{1}{5}$	.66 $\frac{1}{2}$ 2.66 1.99 $\frac{1}{2}$	.64 $\frac{2}{5}$ 2.58 $\frac{2}{5}$ 1.93 $\frac{1}{5}$
<b>20</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.85 $\frac{1}{2}$ 3.42 2.56 $\frac{1}{2}$	.83 $\frac{1}{4}$ 3.33 2.49 $\frac{3}{4}$	.81 3.24 2.43	.78 $\frac{3}{4}$ 3.15 2.36 $\frac{1}{4}$	.76 $\frac{1}{2}$ 3.06 2.29 $\frac{1}{2}$
<b>21</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	1.02 $\frac{3}{5}$ 4.10 $\frac{2}{5}$ 3.07 $\frac{1}{5}$	.99 $\frac{9}{10}$ 3.99 $\frac{2}{5}$ 2.99 $\frac{7}{10}$	.97 $\frac{1}{5}$ 3.88 $\frac{1}{5}$ 2.91 $\frac{1}{5}$	.94 $\frac{1}{2}$ 3.78 2.83 $\frac{1}{2}$	.91 $\frac{1}{5}$ 3.67 $\frac{1}{5}$ 2.75 $\frac{2}{5}$
<b>22</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	1.14 4.56 3.42	1.11 4.44 3.33	1.08 4.32 3.24	1.05 4.20 3.15	1.02 4.08 3.06
<b>24</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	1.23 $\frac{1}{2}$ 4.94 3.70 $\frac{1}{2}$	1.20 $\frac{1}{4}$ 4.81 3.60 $\frac{3}{4}$	1.17 4.68 3.51	1.13 $\frac{3}{4}$ 4.55 3.41 $\frac{1}{4}$	1.10 $\frac{1}{2}$ 4.42 3.31 $\frac{1}{2}$
<b>27</b> Inch	Pipe, per foot Ys or Ts 2 $\frac{1}{2}$ feet long Inlet less than 15 in.) Curves or Elbows	1.71 8.55 5.13	1.66 $\frac{1}{2}$ 8.32 $\frac{1}{2}$ 4.99 $\frac{1}{2}$	1.62 8.10 4.86	1.57 $\frac{1}{2}$ 7.87 $\frac{1}{2}$ 4.72 $\frac{1}{2}$	1.53 7.65 4.59
<b>30</b> Inch	Pipe, per foot Ys or Ts 2 $\frac{1}{2}$ feet long Inlet less than 15 in.) Curves or Elbows	2.09 10.45 6.27	2.03 $\frac{1}{2}$ 10.17 $\frac{1}{2}$ 6.10 $\frac{1}{2}$	1.98 9.90 5.94	1.92 $\frac{1}{2}$ 9.62 $\frac{1}{2}$ 5.77 $\frac{1}{2}$	1.87 9.35 5.61
<b>33</b> Inch	Pipe, per foot Ys or Ts 2 $\frac{1}{2}$ feet long Curves or Elbows	2.37 $\frac{1}{2}$ 11.87 $\frac{1}{2}$ 7.12 $\frac{1}{2}$	2.31 $\frac{1}{4}$ 11.56 $\frac{1}{4}$ 6.93 $\frac{3}{4}$	2.25 11.25 6.75	2.18 $\frac{3}{4}$ 10.93 $\frac{3}{4}$ 6.56 $\frac{1}{4}$	2.12 $\frac{1}{2}$ 10.62 $\frac{1}{2}$ 6.37 $\frac{1}{2}$
<b>36</b> Inch	Pipe, per foot Ys or Ts 2 $\frac{1}{2}$ feet long Curves or Elbows	2.66 13.30 7.98	2.59 12.95 7.77	2.52 12.60 7.56	2.45 12.25 7.35	2.38 11.90 7.14

50 % additional for Y and T Inlets, 15-inch and larger, on any size Pipe.



67%	68%	69%	70%	71%	72%	73%	74%	Size
\$ .06 <sup>3</sup> / <sub>8</sub> .26 <sup>3</sup> / <sub>8</sub> .19 <sup>3</sup> / <sub>8</sub>	\$ .06 <sup>1</sup> / <sub>2</sub> .25 <sup>1</sup> / <sub>2</sub> .19 <sup>1</sup> / <sub>2</sub>	\$ .06 <sup>1</sup> / <sub>2</sub> .24 <sup>1</sup> / <sub>2</sub> .18 <sup>1</sup> / <sub>2</sub>	\$ .06 .24 .18	\$ .05 <sup>1</sup> / <sub>2</sub> .23 <sup>1</sup> / <sub>2</sub> .17 <sup>1</sup> / <sub>2</sub>	\$ .05 <sup>1</sup> / <sub>2</sub> .22 <sup>1</sup> / <sub>2</sub> .16 <sup>1</sup> / <sub>2</sub>	\$ .05 <sup>1</sup> / <sub>2</sub> .21 <sup>1</sup> / <sub>2</sub> .16 <sup>1</sup> / <sub>2</sub>	\$ .05 <sup>1</sup> / <sub>2</sub> .20 <sup>1</sup> / <sub>2</sub> .15 <sup>1</sup> / <sub>2</sub>	<b>2 3/4</b> Inch
.08 <sup>1</sup> / <sub>4</sub> .33 .24 <sup>1</sup> / <sub>4</sub>	.08 .32 .24	.07 <sup>3</sup> / <sub>4</sub> .31 .23 <sup>1</sup> / <sub>4</sub>	.07 <sup>1</sup> / <sub>2</sub> .30 .22 <sup>1</sup> / <sub>2</sub>	.07 <sup>1</sup> / <sub>4</sub> .29 .21 <sup>3</sup> / <sub>4</sub>	.07 .28 .21	.06 <sup>3</sup> / <sub>4</sub> .27 .20 <sup>1</sup> / <sub>4</sub>	.06 <sup>1</sup> / <sub>2</sub> .26 .19 <sup>1</sup> / <sub>2</sub>	<b>4</b> Inch
.09 <sup>9</sup> / <sub>10</sub> .39 <sup>9</sup> / <sub>10</sub> .29 <sup>7</sup> / <sub>10</sub>	.09 <sup>3</sup> / <sub>4</sub> .38 <sup>3</sup> / <sub>4</sub> .28 <sup>3</sup> / <sub>4</sub>	.09 <sup>3</sup> / <sub>4</sub> .37 <sup>3</sup> / <sub>4</sub> .27 <sup>9</sup> / <sub>10</sub>	.09 .36 .27	.08 <sup>7</sup> / <sub>10</sub> .34 <sup>7</sup> / <sub>10</sub> .26 <sup>1</sup> / <sub>10</sub>	.08 <sup>2</sup> / <sub>5</sub> .33 <sup>2</sup> / <sub>5</sub> .25 <sup>1</sup> / <sub>5</sub>	.08 <sup>1</sup> / <sub>10</sub> .32 <sup>1</sup> / <sub>10</sub> .24 <sup>3</sup> / <sub>10</sub>	.07 <sup>4</sup> / <sub>5</sub> .31 <sup>4</sup> / <sub>5</sub> .23 <sup>2</sup> / <sub>5</sub>	<b>5</b> Inch
.13 <sup>1</sup> / <sub>2</sub> .52 <sup>1</sup> / <sub>2</sub> .39 <sup>1</sup> / <sub>2</sub>	.12 <sup>1</sup> / <sub>2</sub> .51 <sup>1</sup> / <sub>2</sub> .38 <sup>1</sup> / <sub>2</sub>	.12 <sup>2</sup> / <sub>5</sub> .49 <sup>2</sup> / <sub>5</sub> .37 <sup>1</sup> / <sub>5</sub>	.12 .48 .36	.11 <sup>3</sup> / <sub>5</sub> .46 <sup>3</sup> / <sub>5</sub> .34 <sup>2</sup> / <sub>5</sub>	.11 <sup>1</sup> / <sub>5</sub> .44 <sup>1</sup> / <sub>5</sub> .33 <sup>1</sup> / <sub>5</sub>	.10 <sup>4</sup> / <sub>5</sub> .43 <sup>4</sup> / <sub>5</sub> .32 <sup>3</sup> / <sub>5</sub>	.10 <sup>2</sup> / <sub>5</sub> .41 <sup>2</sup> / <sub>5</sub> .31 <sup>1</sup> / <sub>5</sub>	<b>6</b> Inch
.18 <sup>3</sup> / <sub>10</sub> .72 <sup>3</sup> / <sub>10</sub> .54 <sup>3</sup> / <sub>10</sub>	.17 <sup>2</sup> / <sub>5</sub> .70 <sup>2</sup> / <sub>5</sub> .52 <sup>2</sup> / <sub>5</sub>	.17 <sup>1</sup> / <sub>10</sub> .68 <sup>1</sup> / <sub>10</sub> .51 <sup>3</sup> / <sub>10</sub>	.16 <sup>1</sup> / <sub>2</sub> .66 .49 <sup>1</sup> / <sub>2</sub>	.15 <sup>1</sup> / <sub>10</sub> .63 <sup>1</sup> / <sub>10</sub> .47 <sup>1</sup> / <sub>10</sub>	.15 <sup>2</sup> / <sub>5</sub> .61 <sup>2</sup> / <sub>5</sub> .46 <sup>1</sup> / <sub>5</sub>	.14 <sup>1</sup> / <sub>10</sub> .59 <sup>1</sup> / <sub>10</sub> .44 <sup>1</sup> / <sub>10</sub>	.14 <sup>3</sup> / <sub>10</sub> .57 <sup>3</sup> / <sub>10</sub> .42 <sup>3</sup> / <sub>10</sub>	<b>8</b> Inch
.21 <sup>9</sup> / <sub>10</sub> .85 <sup>9</sup> / <sub>10</sub> .64 <sup>9</sup> / <sub>10</sub>	.20 <sup>1</sup> / <sub>2</sub> .83 <sup>1</sup> / <sub>2</sub> .62 <sup>1</sup> / <sub>2</sub>	.20 <sup>3</sup> / <sub>10</sub> .80 <sup>3</sup> / <sub>10</sub> .60 <sup>3</sup> / <sub>10</sub>	.19 <sup>1</sup> / <sub>2</sub> .78 .58 <sup>1</sup> / <sub>2</sub>	.18 <sup>7</sup> / <sub>10</sub> .75 <sup>7</sup> / <sub>10</sub> .56 <sup>1</sup> / <sub>10</sub>	.18 <sup>1</sup> / <sub>5</sub> .72 <sup>1</sup> / <sub>5</sub> .54 <sup>1</sup> / <sub>5</sub>	.17 <sup>1</sup> / <sub>10</sub> .70 <sup>1</sup> / <sub>10</sub> .52 <sup>1</sup> / <sub>10</sub>	.16 <sup>9</sup> / <sub>10</sub> .67 <sup>9</sup> / <sub>10</sub> .50 <sup>9</sup> / <sub>10</sub>	<b>9</b> Inch
.26 <sup>2</sup> / <sub>5</sub> 1.05 <sup>2</sup> / <sub>5</sub> .79 <sup>2</sup> / <sub>5</sub>	.25 <sup>1</sup> / <sub>5</sub> 1.02 <sup>1</sup> / <sub>5</sub> .76 <sup>1</sup> / <sub>5</sub>	.24 <sup>1</sup> / <sub>5</sub> .99 <sup>1</sup> / <sub>5</sub> .74 <sup>1</sup> / <sub>5</sub>	.24 .96 .72	.23 <sup>1</sup> / <sub>5</sub> .92 <sup>1</sup> / <sub>5</sub> .69 <sup>1</sup> / <sub>5</sub>	.22 <sup>2</sup> / <sub>5</sub> .89 <sup>2</sup> / <sub>5</sub> .67 <sup>2</sup> / <sub>5</sub>	.21 <sup>3</sup> / <sub>5</sub> .86 <sup>3</sup> / <sub>5</sub> .64 <sup>3</sup> / <sub>5</sub>	.20 <sup>4</sup> / <sub>5</sub> .83 <sup>4</sup> / <sub>5</sub> .62 <sup>4</sup> / <sub>5</sub>	<b>10</b> Inch
.33 1.32 .99	.32 1.28 .96	.31 1.24 .93	.30 1.20 .90	.29 1.16 .87	.28 1.12 .84	.27 1.08 .81	.26 1.04 .78	<b>12</b> Inch
.44 <sup>1</sup> / <sub>10</sub> 1.78 <sup>1</sup> / <sub>10</sub> 1.33 <sup>1</sup> / <sub>10</sub>	.43 <sup>1</sup> / <sub>5</sub> 1.72 <sup>1</sup> / <sub>5</sub> 1.29 <sup>1</sup> / <sub>5</sub>	.41 <sup>1</sup> / <sub>10</sub> 1.67 <sup>1</sup> / <sub>10</sub> 1.25 <sup>1</sup> / <sub>10</sub>	.40 <sup>1</sup> / <sub>2</sub> 1.62 1.21 <sup>1</sup> / <sub>2</sub>	.39 <sup>3</sup> / <sub>10</sub> 1.56 <sup>3</sup> / <sub>10</sub> 1.17 <sup>3</sup> / <sub>10</sub>	.37 <sup>2</sup> / <sub>5</sub> 1.51 <sup>2</sup> / <sub>5</sub> 1.13 <sup>2</sup> / <sub>5</sub>	.36 <sup>9</sup> / <sub>10</sub> 1.45 <sup>9</sup> / <sub>10</sub> 1.09 <sup>9</sup> / <sub>10</sub>	.35 <sup>1</sup> / <sub>10</sub> 1.40 <sup>1</sup> / <sub>10</sub> 1.05 <sup>1</sup> / <sub>10</sub>	<b>15</b> Inch
.62 <sup>1</sup> / <sub>10</sub> 2.50 <sup>1</sup> / <sub>10</sub> 1.88 <sup>1</sup> / <sub>10</sub>	.60 <sup>1</sup> / <sub>5</sub> 2.43 <sup>1</sup> / <sub>5</sub> 1.82 <sup>1</sup> / <sub>5</sub>	.58 <sup>9</sup> / <sub>10</sub> 2.35 <sup>9</sup> / <sub>10</sub> 1.76 <sup>9</sup> / <sub>10</sub>	.57 2.28 1.71	.55 <sup>1</sup> / <sub>10</sub> 2 20 <sup>1</sup> / <sub>10</sub> 1.65 <sup>1</sup> / <sub>10</sub>	.53 <sup>1</sup> / <sub>5</sub> 2.12 <sup>1</sup> / <sub>5</sub> 1.59 <sup>1</sup> / <sub>5</sub>	.51 <sup>3</sup> / <sub>10</sub> 2.05 <sup>3</sup> / <sub>10</sub> 1.53 <sup>3</sup> / <sub>10</sub>	.49 <sup>2</sup> / <sub>5</sub> 1.97 <sup>2</sup> / <sub>5</sub> 1.48 <sup>2</sup> / <sub>5</sub>	<b>18</b> Inch
.74 <sup>1</sup> / <sub>4</sub> 2.97 2.22 <sup>3</sup> / <sub>4</sub>	.72 2.88 2.16	.69 <sup>3</sup> / <sub>4</sub> 2.79 2.09 <sup>1</sup> / <sub>4</sub>	.67 <sup>1</sup> / <sub>2</sub> 2.70 2.02 <sup>1</sup> / <sub>2</sub>	.65 <sup>1</sup> / <sub>4</sub> 2.61 1.95 <sup>3</sup> / <sub>4</sub>	.63 2.52 1.89	.60 <sup>3</sup> / <sub>4</sub> 2.43 1.82 <sup>1</sup> / <sub>4</sub>	.58 <sup>1</sup> / <sub>2</sub> 2.34 1.75 <sup>1</sup> / <sub>2</sub>	<b>20</b> Inch
.89 <sup>1</sup> / <sub>10</sub> 3.56 <sup>1</sup> / <sub>10</sub> 2.67 <sup>3</sup> / <sub>10</sub>	.86 <sup>1</sup> / <sub>5</sub> 3.45 <sup>1</sup> / <sub>5</sub> 2.59 <sup>1</sup> / <sub>5</sub>	.83 <sup>7</sup> / <sub>10</sub> 3.34 <sup>7</sup> / <sub>10</sub> 2.51 <sup>1</sup> / <sub>10</sub>	.81 3.24 2.43	.78 <sup>3</sup> / <sub>10</sub> 3.13 <sup>3</sup> / <sub>10</sub> 2.34 <sup>1</sup> / <sub>10</sub>	.75 <sup>2</sup> / <sub>5</sub> 3.02 <sup>2</sup> / <sub>5</sub> 2.26 <sup>1</sup> / <sub>5</sub>	.72 <sup>9</sup> / <sub>10</sub> 2.91 <sup>9</sup> / <sub>10</sub> 2.18 <sup>7</sup> / <sub>10</sub>	.70 <sup>1</sup> / <sub>5</sub> 2.80 <sup>1</sup> / <sub>5</sub> 2.10 <sup>3</sup> / <sub>5</sub>	<b>21</b> Inch
.99 3.96 2.97	.96 3.84 2.88	.93 3.72 2.79	.90 3.60 2.70	.87 3.48 2.61	.84 3.36 2.52	.81 3.24 2.43	.78 3.12 2.34	<b>22</b> Inch
1.07 <sup>1</sup> / <sub>4</sub> 4.29 3.21 <sup>1</sup> / <sub>4</sub>	1.04 4.16 3.12	1.00 <sup>3</sup> / <sub>4</sub> 4.03 3.02 <sup>1</sup> / <sub>4</sub>	.97 <sup>1</sup> / <sub>2</sub> 3.90 2.92 <sup>1</sup> / <sub>2</sub>	.94 <sup>1</sup> / <sub>4</sub> 3.77 2.82 <sup>3</sup> / <sub>4</sub>	.91 3.64 2.73	.87 <sup>3</sup> / <sub>4</sub> 3.51 2.63 <sup>1</sup> / <sub>4</sub>	.84 <sup>1</sup> / <sub>2</sub> 3.38 2.53 <sup>1</sup> / <sub>2</sub>	<b>24</b> Inch
1.48 <sup>1</sup> / <sub>2</sub> 7.42 <sup>1</sup> / <sub>2</sub> 4.45 <sup>1</sup> / <sub>2</sub>	1.44 7.20 4.32	1.39 <sup>1</sup> / <sub>2</sub> 6.97 <sup>1</sup> / <sub>2</sub> 4.18 <sup>1</sup> / <sub>2</sub>	1.35 6.75 4.05	1.30 <sup>1</sup> / <sub>2</sub> 6.52 <sup>1</sup> / <sub>2</sub> 3.91 <sup>1</sup> / <sub>2</sub>	1.26 6.30 3.78	1.21 <sup>1</sup> / <sub>2</sub> 6.07 <sup>1</sup> / <sub>2</sub> 3.64 <sup>1</sup> / <sub>2</sub>	1.17 5.85 3.51	<b>27</b> Inch
1.81 <sup>1</sup> / <sub>2</sub> 9.07 <sup>1</sup> / <sub>2</sub> 5.44 <sup>1</sup> / <sub>2</sub>	1.76 8.80 5.28	1.70 <sup>1</sup> / <sub>2</sub> 8.52 <sup>1</sup> / <sub>2</sub> 5.11 <sup>1</sup> / <sub>2</sub>	1.65 8.25 4.95	1.59 <sup>1</sup> / <sub>2</sub> 7.97 <sup>1</sup> / <sub>2</sub> 4.78 <sup>1</sup> / <sub>2</sub>	1.54 7.70 4.62	1.48 <sup>1</sup> / <sub>2</sub> 7.42 <sup>1</sup> / <sub>2</sub> 4.45 <sup>1</sup> / <sub>2</sub>	1.43 7.15 4.29	<b>30</b> Inch
2.06 <sup>1</sup> / <sub>4</sub> 10.31 <sup>1</sup> / <sub>4</sub> 6.18 <sup>1</sup> / <sub>4</sub>	2.00 10 00 6.00	1 93 <sup>3</sup> / <sub>4</sub> 9.68 <sup>3</sup> / <sub>4</sub> 5.81 <sup>1</sup> / <sub>4</sub>	1.87 <sup>1</sup> / <sub>2</sub> 9.37 <sup>1</sup> / <sub>2</sub> 5.62 <sup>1</sup> / <sub>2</sub>					<b>33</b> Inch
2.31 11.55 6.93	2.24 11 20 6.72	2.17 10.85 6.51	2.10 10.50 6.30					<b>36</b> Inch

50% additional for Y and T Inlets, 15-inch and larger, on any size Pipe.

Size	Description	75 %	76 %	77 %	78 %	% 79
<b>2<sup>3</sup>/<sub>4</sub></b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	\$.05 .20 .15	\$.044 <sup>3</sup> / <sub>8</sub> .19 <sup>1</sup> / <sub>8</sub> .14 <sup>3</sup> / <sub>8</sub>	\$.043 <sup>3</sup> / <sub>8</sub> .18 <sup>3</sup> / <sub>8</sub> .13 <sup>3</sup> / <sub>8</sub>	\$.043 <sup>3</sup> / <sub>8</sub> .17 <sup>3</sup> / <sub>8</sub> .13 <sup>3</sup> / <sub>8</sub>	\$.041 <sup>1</sup> / <sub>8</sub> .16 <sup>3</sup> / <sub>8</sub> .12 <sup>3</sup> / <sub>8</sub>
<b>4</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.06 <sup>1</sup> / <sub>4</sub> .25 .18 <sup>3</sup> / <sub>4</sub>	.06 .24 .18	.05 <sup>3</sup> / <sub>4</sub> .23 .17 <sup>1</sup> / <sub>4</sub>	.05 <sup>1</sup> / <sub>2</sub> .22 .16 <sup>1</sup> / <sub>2</sub>	.05 <sup>1</sup> / <sub>4</sub> .21 .15 <sup>3</sup> / <sub>4</sub>
<b>5</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.07 <sup>1</sup> / <sub>2</sub> .30 .22 <sup>1</sup> / <sub>2</sub>	.07 <sup>1</sup> / <sub>2</sub> .28 <sup>3</sup> / <sub>8</sub> .21 <sup>3</sup> / <sub>8</sub>	.06 <sup>9</sup> / <sub>10</sub> .27 <sup>3</sup> / <sub>8</sub> .20 <sup>7</sup> / <sub>10</sub>	.06 <sup>3</sup> / <sub>5</sub> .26 <sup>3</sup> / <sub>8</sub> .19 <sup>3</sup> / <sub>5</sub>	.06 <sup>3</sup> / <sub>10</sub> .25 <sup>3</sup> / <sub>8</sub> .18 <sup>9</sup> / <sub>10</sub>
<b>6</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.10 .40 .30	.09 <sup>3</sup> / <sub>8</sub> .38 <sup>3</sup> / <sub>8</sub> .28 <sup>3</sup> / <sub>8</sub>	.09 <sup>1</sup> / <sub>2</sub> .36 <sup>1</sup> / <sub>2</sub> .27 <sup>3</sup> / <sub>8</sub>	.08 <sup>1</sup> / <sub>2</sub> .35 <sup>1</sup> / <sub>2</sub> .26 <sup>3</sup> / <sub>8</sub>	.08 <sup>3</sup> / <sub>8</sub> .33 <sup>3</sup> / <sub>8</sub> .25 <sup>3</sup> / <sub>8</sub>
<b>8</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.13 <sup>3</sup> / <sub>4</sub> .55 .41 <sup>1</sup> / <sub>4</sub>	.13 <sup>1</sup> / <sub>2</sub> .52 <sup>1</sup> / <sub>2</sub> .39 <sup>3</sup> / <sub>8</sub>	.12 <sup>3</sup> / <sub>10</sub> .50 <sup>3</sup> / <sub>10</sub> .37 <sup>3</sup> / <sub>10</sub>	.12 <sup>1</sup> / <sub>10</sub> .48 <sup>3</sup> / <sub>10</sub> .36 <sup>1</sup> / <sub>10</sub>	.11 <sup>1</sup> / <sub>10</sub> .46 <sup>1</sup> / <sub>10</sub> .34 <sup>1</sup> / <sub>10</sub>
<b>9</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.16 <sup>3</sup> / <sub>4</sub> .65 .48 <sup>3</sup> / <sub>4</sub>	.15 <sup>3</sup> / <sub>8</sub> .62 <sup>3</sup> / <sub>8</sub> .46 <sup>3</sup> / <sub>8</sub>	.14 <sup>3</sup> / <sub>10</sub> .59 <sup>3</sup> / <sub>10</sub> .44 <sup>1</sup> / <sub>10</sub>	.14 <sup>3</sup> / <sub>10</sub> .57 <sup>3</sup> / <sub>10</sub> .42 <sup>1</sup> / <sub>10</sub>	.13 <sup>3</sup> / <sub>10</sub> .54 <sup>3</sup> / <sub>10</sub> .40 <sup>1</sup> / <sub>10</sub>
<b>10</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.20 .80 .60	.19 <sup>1</sup> / <sub>2</sub> .76 <sup>1</sup> / <sub>2</sub> .57 <sup>3</sup> / <sub>8</sub>	.18 <sup>3</sup> / <sub>8</sub> .73 <sup>3</sup> / <sub>8</sub> .55 <sup>1</sup> / <sub>2</sub>	.17 <sup>3</sup> / <sub>8</sub> .70 <sup>3</sup> / <sub>8</sub> .52 <sup>1</sup> / <sub>2</sub>	.16 <sup>3</sup> / <sub>8</sub> .67 <sup>3</sup> / <sub>8</sub> .50 <sup>3</sup> / <sub>8</sub>
<b>12</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.25 1.00 .75	.24 .96 .72	.23 .92 .69	.22 .88 .66	.21 .84 .63
<b>15</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.33 <sup>3</sup> / <sub>4</sub> 1.35 1.01 <sup>1</sup> / <sub>4</sub>	.32 <sup>3</sup> / <sub>8</sub> 1.29 <sup>3</sup> / <sub>8</sub> .97 <sup>1</sup> / <sub>8</sub>	.31 <sup>2</sup> / <sub>10</sub> 1.24 <sup>3</sup> / <sub>8</sub> .93 <sup>2</sup> / <sub>10</sub>	.29 <sup>7</sup> / <sub>10</sub> 1.18 <sup>3</sup> / <sub>8</sub> .89 <sup>1</sup> / <sub>10</sub>	.28 <sup>7</sup> / <sub>10</sub> 1.13 <sup>3</sup> / <sub>8</sub> .85 <sup>2</sup> / <sub>10</sub>
<b>18</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.47 <sup>1</sup> / <sub>2</sub> 1.90 1.42 <sup>1</sup> / <sub>2</sub>	.45 <sup>3</sup> / <sub>8</sub> 1.82 <sup>3</sup> / <sub>8</sub> 1.36 <sup>3</sup> / <sub>8</sub>	.43 <sup>7</sup> / <sub>10</sub> 1.74 <sup>3</sup> / <sub>8</sub> 1.31 <sup>1</sup> / <sub>10</sub>	.41 <sup>3</sup> / <sub>8</sub> 1.67 <sup>3</sup> / <sub>8</sub> 1.25 <sup>3</sup> / <sub>8</sub>	.39 <sup>9</sup> / <sub>10</sub> 1.59 <sup>3</sup> / <sub>8</sub> 1.19 <sup>7</sup> / <sub>10</sub>
<b>20</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.56 <sup>1</sup> / <sub>4</sub> 2.25 1.68 <sup>3</sup> / <sub>4</sub>	.54 2.16 1.62	.51 <sup>3</sup> / <sub>4</sub> 2.07 1.55 <sup>1</sup> / <sub>4</sub>	.49 <sup>1</sup> / <sub>2</sub> 1.95 1.48 <sup>1</sup> / <sub>2</sub>	.47 <sup>1</sup> / <sub>4</sub> 1.89 1.41 <sup>3</sup> / <sub>4</sub>
<b>21</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.67 <sup>1</sup> / <sub>2</sub> 2.70 2.02 <sup>1</sup> / <sub>2</sub>	.64 <sup>3</sup> / <sub>8</sub> 2.59 <sup>1</sup> / <sub>8</sub> 1.94 <sup>3</sup> / <sub>8</sub>	.62 <sup>1</sup> / <sub>10</sub> 2.48 <sup>3</sup> / <sub>8</sub> 1.86 <sup>1</sup> / <sub>10</sub>	.59 <sup>3</sup> / <sub>8</sub> 2.37 <sup>3</sup> / <sub>8</sub> 1.78 <sup>1</sup> / <sub>8</sub>	.56 <sup>7</sup> / <sub>10</sub> 2.26 <sup>3</sup> / <sub>8</sub> 1.70 <sup>1</sup> / <sub>10</sub>
<b>22</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.75 3.00 2.25	.72 2.88 2.16	.69 2.76 2.07	.66 2.64 1.98	.63 2.52 1.89
<b>24</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.81 <sup>1</sup> / <sub>4</sub> 3.25 2.43 <sup>3</sup> / <sub>4</sub>	.78 3.12 2.34	.74 <sup>3</sup> / <sub>4</sub> 2.99 2.24 <sup>1</sup> / <sub>4</sub>	.71 <sup>1</sup> / <sub>2</sub> 2.86 2.14 <sup>1</sup> / <sub>2</sub>	.68 <sup>1</sup> / <sub>4</sub> 2.73 2.04 <sup>3</sup> / <sub>4</sub>
<b>27</b> Inch	Pipe, per foot Ys or Ts 2 <sup>1</sup> / <sub>2</sub> feet long) Inlet less than 15 in.) Curves or Elbows	1.12 <sup>1</sup> / <sub>2</sub> 5.62 <sup>1</sup> / <sub>2</sub> 3.37 <sup>1</sup> / <sub>2</sub>	1.08 5.40 3.24	1.03 <sup>1</sup> / <sub>2</sub> 5.17 <sup>1</sup> / <sub>2</sub> 3.10 <sup>1</sup> / <sub>2</sub>	.99 4.95 2.97	.94 <sup>1</sup> / <sub>2</sub> 4.72 <sup>1</sup> / <sub>2</sub> 2.83 <sup>1</sup> / <sub>2</sub>
<b>30</b> Inch	Pipe, per foot Ys or Ts 2 <sup>1</sup> / <sub>2</sub> feet long) Inlet less than 15 in.) Curves or Elbows	1.37 <sup>1</sup> / <sub>2</sub> 6.87 <sup>1</sup> / <sub>2</sub> 4.12 <sup>1</sup> / <sub>2</sub>	1.32 6.60 3.96	1.26 <sup>1</sup> / <sub>2</sub> 6.32 <sup>1</sup> / <sub>2</sub> 3.79 <sup>1</sup> / <sub>2</sub>	1.21 6.05 3.63	1.15 <sup>1</sup> / <sub>2</sub> 5.77 <sup>1</sup> / <sub>2</sub> 3.46 <sup>1</sup> / <sub>2</sub>
<b>33</b> Inch	Pipe, per foot Ys or Ts 2 <sup>1</sup> / <sub>2</sub> feet long Curves or Elbows					
<b>36</b> Inch	Pipe, per foot Ys or Ts 2 <sup>1</sup> / <sub>2</sub> feet long Curves or Elbows					

50 % additional for Y and T Inlets, 15-inch and larger, on any size Pipe.



# Net Prices of Pipe and Fittings at Various Discounts

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80 %	81 %	82 %	83 %	84 %	85 %	86 %	87 %	Size
\$ .04 .16 .12	\$ .03 <sup>3</sup> / <sub>4</sub> .15 <sup>1</sup> / <sub>2</sub> .11 <sup>3</sup> / <sub>4</sub>	\$ .03 <sup>3</sup> / <sub>4</sub> .14 <sup>3</sup> / <sub>4</sub> .10 <sup>3</sup> / <sub>4</sub>	\$ .03 <sup>3</sup> / <sub>4</sub> .13 <sup>3</sup> / <sub>4</sub> .10 <sup>3</sup> / <sub>4</sub>	\$ .03 <sup>1</sup> / <sub>2</sub> .12 <sup>3</sup> / <sub>4</sub> .09 <sup>3</sup> / <sub>4</sub>	\$ .03 .12 .09	\$ .02 <sup>4</sup> / <sub>5</sub> .11 <sup>1</sup> / <sub>2</sub> .08 <sup>3</sup> / <sub>4</sub>	.02 <sup>3</sup> / <sub>4</sub> .10 <sup>3</sup> / <sub>4</sub> .07 <sup>3</sup> / <sub>4</sub>	2 <sup>3</sup> / <sub>4</sub> Inch
.05 .20 .15	.04 <sup>3</sup> / <sub>4</sub> .19 .14 <sup>1</sup> / <sub>4</sub>	.04 <sup>1</sup> / <sub>2</sub> .18 .13 <sup>1</sup> / <sub>2</sub>	.04 <sup>1</sup> / <sub>4</sub> .17 .12 <sup>3</sup> / <sub>4</sub>	.04 .16 .12	.03 <sup>3</sup> / <sub>4</sub> .15 .11 <sup>1</sup> / <sub>4</sub>	.03 <sup>1</sup> / <sub>2</sub> .14 .10 <sup>1</sup> / <sub>2</sub>	.03 <sup>1</sup> / <sub>4</sub> .13 .09 <sup>3</sup> / <sub>4</sub>	4 Inch
.06 .24 .18	.05 <sup>7</sup> / <sub>10</sub> .22 <sup>4</sup> / <sub>5</sub> .17 <sup>1</sup> / <sub>10</sub>	.05 <sup>2</sup> / <sub>5</sub> .21 <sup>1</sup> / <sub>5</sub> .16 <sup>1</sup> / <sub>5</sub>	.05 <sup>1</sup> / <sub>10</sub> .20 <sup>3</sup> / <sub>5</sub> .15 <sup>3</sup> / <sub>10</sub>	.04 <sup>4</sup> / <sub>5</sub> .19 .14 <sup>4</sup> / <sub>5</sub>	.04 <sup>1</sup> / <sub>2</sub> .18 .13 <sup>1</sup> / <sub>2</sub>	.04 <sup>1</sup> / <sub>5</sub> .16 <sup>4</sup> / <sub>5</sub> .12 <sup>3</sup> / <sub>5</sub>	.03 <sup>9</sup> / <sub>10</sub> .15 <sup>3</sup> / <sub>5</sub> .11 <sup>7</sup> / <sub>10</sub>	5 Inch
.08 .32 .24	.07 <sup>3</sup> / <sub>4</sub> .30 <sup>2</sup> / <sub>5</sub> .22 <sup>3</sup> / <sub>4</sub>	.07 <sup>1</sup> / <sub>2</sub> .28 <sup>3</sup> / <sub>4</sub> .21 <sup>3</sup> / <sub>4</sub>	.06 <sup>4</sup> / <sub>5</sub> .27 <sup>1</sup> / <sub>5</sub> .20 <sup>3</sup> / <sub>5</sub>	.06 <sup>2</sup> / <sub>5</sub> .25 <sup>3</sup> / <sub>5</sub> .19 <sup>3</sup> / <sub>5</sub>	.06 .24 .18	.05 <sup>3</sup> / <sub>4</sub> .22 <sup>2</sup> / <sub>5</sub> .16 <sup>3</sup> / <sub>4</sub>	.05 <sup>1</sup> / <sub>5</sub> .20 <sup>4</sup> / <sub>5</sub> .15 <sup>3</sup> / <sub>5</sub>	6 Inch
.11 .44 .33	.10 <sup>9</sup> / <sub>10</sub> .41 <sup>1</sup> / <sub>2</sub> .31 <sup>7</sup> / <sub>10</sub>	.09 <sup>9</sup> / <sub>10</sub> .39 <sup>3</sup> / <sub>4</sub> .29 <sup>7</sup> / <sub>10</sub>	.09 <sup>7</sup> / <sub>10</sub> .37 <sup>3</sup> / <sub>4</sub> .28 <sup>1</sup> / <sub>10</sub>	.08 <sup>4</sup> / <sub>5</sub> .35 <sup>1</sup> / <sub>2</sub> .26 <sup>3</sup> / <sub>5</sub>	.08 <sup>1</sup> / <sub>4</sub> .33 .24 <sup>3</sup> / <sub>4</sub>	.07 <sup>7</sup> / <sub>10</sub> .30 <sup>3</sup> / <sub>4</sub> .23 <sup>1</sup> / <sub>10</sub>	.07 <sup>3</sup> / <sub>10</sub> .28 <sup>3</sup> / <sub>5</sub> .21 <sup>9</sup> / <sub>10</sub>	8 Inch
.13 .52 .39	.12 <sup>7</sup> / <sub>10</sub> .49 <sup>3</sup> / <sub>4</sub> .37 <sup>1</sup> / <sub>10</sub>	.11 <sup>7</sup> / <sub>10</sub> .46 <sup>1</sup> / <sub>2</sub> .35 <sup>1</sup> / <sub>10</sub>	.11 <sup>1</sup> / <sub>10</sub> .44 <sup>1</sup> / <sub>2</sub> .33 <sup>3</sup> / <sub>10</sub>	.10 <sup>2</sup> / <sub>5</sub> .41 <sup>3</sup> / <sub>5</sub> .31 <sup>1</sup> / <sub>5</sub>	.09 <sup>3</sup> / <sub>4</sub> .39 .29 <sup>1</sup> / <sub>4</sub>	.09 <sup>1</sup> / <sub>10</sub> .36 <sup>3</sup> / <sub>5</sub> .27 <sup>3</sup> / <sub>10</sub>	.08 <sup>9</sup> / <sub>10</sub> .33 <sup>3</sup> / <sub>5</sub> .25 <sup>7</sup> / <sub>10</sub>	9 Inch
.16 .64 .48	.15 <sup>1</sup> / <sub>5</sub> .60 <sup>1</sup> / <sub>5</sub> .45 <sup>3</sup> / <sub>5</sub>	.14 <sup>2</sup> / <sub>5</sub> .57 <sup>3</sup> / <sub>5</sub> .43 <sup>1</sup> / <sub>5</sub>	.13 <sup>3</sup> / <sub>5</sub> .54 <sup>2</sup> / <sub>5</sub> .40 <sup>1</sup> / <sub>5</sub>	.12 <sup>4</sup> / <sub>5</sub> .51 <sup>1</sup> / <sub>5</sub> .38 <sup>3</sup> / <sub>5</sub>	.12 .48 .36	.11 <sup>1</sup> / <sub>5</sub> .44 <sup>4</sup> / <sub>5</sub> .33 <sup>3</sup> / <sub>5</sub>	.10 <sup>2</sup> / <sub>5</sub> .41 <sup>3</sup> / <sub>5</sub> .31 <sup>1</sup> / <sub>5</sub>	10 Inch
.20 .80 .60	.19 .76 .57	.18 .72 .54	.17 .68 .51	.16 .64 .48	.15 .60 .45	.14 .56 .42	.13 .52 .39	12 Inch
.27 1.08 .81	.25 <sup>1</sup> / <sub>10</sub> 1.02 <sup>3</sup> / <sub>5</sub> .76 <sup>1</sup> / <sub>10</sub>	.24 <sup>3</sup> / <sub>10</sub> .97 <sup>1</sup> / <sub>5</sub> .72 <sup>1</sup> / <sub>10</sub>	.22 <sup>1</sup> / <sub>10</sub> .91 <sup>1</sup> / <sub>5</sub> .68 <sup>1</sup> / <sub>10</sub>	.21 <sup>3</sup> / <sub>5</sub> .86 <sup>3</sup> / <sub>5</sub> .64 <sup>3</sup> / <sub>5</sub>	.20 <sup>1</sup> / <sub>4</sub> .81 .60 <sup>3</sup> / <sub>4</sub>	.18 <sup>9</sup> / <sub>10</sub> .75 <sup>3</sup> / <sub>5</sub> .56 <sup>9</sup> / <sub>10</sub>	.17 <sup>1</sup> / <sub>10</sub> .70 <sup>1</sup> / <sub>5</sub> .52 <sup>1</sup> / <sub>10</sub>	15 Inch
.38 1.52 1.14	.36 <sup>1</sup> / <sub>10</sub> 1.44 <sup>3</sup> / <sub>5</sub> 1.08 <sup>3</sup> / <sub>10</sub>	.34 <sup>1</sup> / <sub>5</sub> 1.36 <sup>3</sup> / <sub>5</sub> 1.02 <sup>3</sup> / <sub>5</sub>	.32 <sup>3</sup> / <sub>10</sub> 1.29 <sup>1</sup> / <sub>5</sub> .96 <sup>9</sup> / <sub>10</sub>	.30 <sup>3</sup> / <sub>5</sub> 1.21 <sup>3</sup> / <sub>5</sub> .91 <sup>1</sup> / <sub>5</sub>	.28 <sup>1</sup> / <sub>2</sub> 1.14 .85 <sup>1</sup> / <sub>2</sub>	.26 <sup>3</sup> / <sub>5</sub> 1.06 <sup>3</sup> / <sub>5</sub> .79 <sup>3</sup> / <sub>5</sub>	.24 <sup>7</sup> / <sub>10</sub> .98 <sup>4</sup> / <sub>5</sub> .74 <sup>1</sup> / <sub>10</sub>	18 Inch
.45 1.80 1.35	.42 <sup>3</sup> / <sub>4</sub> 1.71 1.28 <sup>1</sup> / <sub>4</sub>	.40 <sup>1</sup> / <sub>2</sub> 1.62 1.21 <sup>1</sup> / <sub>2</sub>	.38 <sup>1</sup> / <sub>4</sub> 1.53 1.14 <sup>3</sup> / <sub>4</sub>	.36 1.44 1.08	.33 <sup>3</sup> / <sub>4</sub> 1.35 1.01 <sup>1</sup> / <sub>4</sub>	.31 <sup>1</sup> / <sub>2</sub> 1.26 .94 <sup>1</sup> / <sub>2</sub>	.29 <sup>1</sup> / <sub>4</sub> 1.17 .87 <sup>3</sup> / <sub>4</sub>	20 Inch
.54 2.16 1.62	.51 <sup>3</sup> / <sub>10</sub> 2.05 <sup>1</sup> / <sub>5</sub> 1.53 <sup>9</sup> / <sub>10</sub>	.48 <sup>3</sup> / <sub>5</sub> 1.94 <sup>3</sup> / <sub>5</sub> 1.45 <sup>3</sup> / <sub>5</sub>	.45 <sup>1</sup> / <sub>10</sub> 1.83 <sup>3</sup> / <sub>5</sub> 1.37 <sup>7</sup> / <sub>10</sub>	.43 <sup>1</sup> / <sub>5</sub> 1.72 <sup>3</sup> / <sub>5</sub> 1.29 <sup>3</sup> / <sub>5</sub>	.40 <sup>1</sup> / <sub>2</sub> 1.62 1.21 <sup>1</sup> / <sub>2</sub>	.37 <sup>3</sup> / <sub>5</sub> 1.51 <sup>1</sup> / <sub>5</sub> 1.13 <sup>3</sup> / <sub>5</sub>	.35 <sup>1</sup> / <sub>10</sub> 1.40 <sup>3</sup> / <sub>5</sub> 1.05 <sup>3</sup> / <sub>10</sub>	21 Inch
.60 2.40 1.80	.57 2.28 1.71	.54 2.16 1.62	.51 2.04 1.53	.48 1.92 1.44	.45 1.80 1.35	.42 1.68 1.26	.39 1.56 1.17	22 Inch
.65 2.60 1.95	.61 <sup>3</sup> / <sub>4</sub> 2.47 1.85 <sup>1</sup> / <sub>4</sub>	.58 <sup>1</sup> / <sub>2</sub> 2.34 1.75 <sup>1</sup> / <sub>2</sub>	.55 <sup>1</sup> / <sub>4</sub> 2.21 1.65 <sup>3</sup> / <sub>4</sub>	.52 2.08 1.56	.48 <sup>3</sup> / <sub>4</sub> 1.95 1.46 <sup>1</sup> / <sub>4</sub>	.45 <sup>1</sup> / <sub>2</sub> 1.82 1.36 <sup>1</sup> / <sub>2</sub>	.42 <sup>1</sup> / <sub>4</sub> 1.69 1.26 <sup>3</sup> / <sub>4</sub>	24 Inch
.90 4.50 2.70	.85 <sup>1</sup> / <sub>2</sub> 4.27 <sup>1</sup> / <sub>2</sub> 2.56 <sup>1</sup> / <sub>2</sub>	.81 4.05 2.43	.76 <sup>1</sup> / <sub>2</sub> 3.82 <sup>1</sup> / <sub>2</sub> 2.29 <sup>1</sup> / <sub>2</sub>	.72 3.60 2.16	.67 <sup>1</sup> / <sub>2</sub> 3.37 <sup>1</sup> / <sub>2</sub> 2.02 <sup>1</sup> / <sub>2</sub>	.63 3.15 1.89	.58 <sup>1</sup> / <sub>2</sub> 2.92 <sup>1</sup> / <sub>2</sub> 1.75 <sup>1</sup> / <sub>2</sub>	27 Inch
1.10 5.50 3.30	1.04 <sup>1</sup> / <sub>2</sub> 5.22 <sup>1</sup> / <sub>2</sub> 3.13 <sup>1</sup> / <sub>2</sub>	.99 4.95 2.97	.93 <sup>1</sup> / <sub>2</sub> 4.67 <sup>1</sup> / <sub>2</sub> 2.80 <sup>1</sup> / <sub>2</sub>	.88 4.40 2.64	.82 <sup>1</sup> / <sub>2</sub> 4.12 <sup>1</sup> / <sub>2</sub> 2.47 <sup>1</sup> / <sub>2</sub>	.77 3.85 2.31	.71 <sup>1</sup> / <sub>2</sub> 3.57 <sup>1</sup> / <sub>2</sub> 2.14 <sup>1</sup> / <sub>2</sub>	30 Inch
								33 Inch
								36 Inch

50 % additional for Y and T Inlets, 15-inch and larger, on any size Pipe.

Size	Description	88%	89%	90%
<b>2 <math>\frac{3}{4}</math> 3</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	\$.022 $\frac{3}{4}$ .09 $\frac{3}{4}$ .07 $\frac{1}{8}$	\$.021 $\frac{3}{4}$ .08 $\frac{3}{4}$ .06 $\frac{3}{8}$	\$.02 .08 .06
<b>4</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.03 .12 .09	.02 $\frac{3}{4}$ .11 .08 $\frac{1}{4}$	.02 $\frac{1}{2}$ .10 .07 $\frac{1}{2}$
<b>5</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.03 $\frac{3}{4}$ .14 $\frac{3}{4}$ .10 $\frac{3}{4}$	.03 $\frac{3}{10}$ .13 $\frac{3}{10}$ .09 $\frac{3}{10}$	.03 .12 .09
<b>6</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.044 $\frac{3}{8}$ .19 $\frac{1}{2}$ .14 $\frac{3}{8}$	.042 $\frac{3}{8}$ .17 $\frac{1}{2}$ .13 $\frac{3}{8}$	.04 .16 .12
<b>8</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.063 $\frac{1}{2}$ .26 $\frac{1}{2}$ .19 $\frac{1}{4}$	.06 $\frac{1}{2}$ .24 $\frac{1}{2}$ .18 $\frac{3}{8}$	.05 $\frac{1}{2}$ .22 .16 $\frac{1}{2}$
<b>9</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.074 $\frac{1}{2}$ .31 $\frac{1}{2}$ .23 $\frac{1}{2}$	.07 $\frac{3}{10}$ .28 $\frac{3}{10}$ .21 $\frac{3}{10}$	.06 $\frac{1}{2}$ .26 .19 $\frac{1}{2}$
<b>10</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.093 $\frac{1}{2}$ .38 $\frac{1}{2}$ .28 $\frac{1}{2}$	.084 $\frac{1}{2}$ .35 $\frac{1}{2}$ .26 $\frac{1}{2}$	.08 .32 .24
<b>12</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.12 .48 .36	.11 .44 .33	.10 .40 .30
<b>15</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.16 $\frac{1}{2}$ .64 $\frac{1}{2}$ .48 $\frac{3}{8}$	.141 $\frac{7}{10}$ .59 $\frac{1}{2}$ .441 $\frac{1}{10}$	.13 $\frac{1}{2}$ .54 .40 $\frac{1}{2}$
<b>18</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.224 $\frac{1}{2}$ .91 $\frac{1}{2}$ .68 $\frac{3}{8}$	.20 $\frac{9}{10}$ .83 $\frac{1}{2}$ .62 $\frac{7}{10}$	.19 .76 .57
<b>20</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.27 1.08 .81	.24 $\frac{3}{4}$ .99 .74 $\frac{1}{4}$	.22 $\frac{1}{2}$ .90 .67 $\frac{1}{2}$
<b>21</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.32 $\frac{3}{8}$ 1.29 $\frac{3}{8}$ .97 $\frac{1}{8}$	.29 $\frac{7}{10}$ 1.18 $\frac{1}{2}$ .89 $\frac{1}{10}$	.27 1.08 .81
<b>22</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.36 1.44 1.08	.33 1.32 .99	.30 1.20 .90
<b>24</b> Inch	Pipe, per foot Ys or Ts 2 feet long Curves or Elbows	.39 1.56 1.17	.35 $\frac{3}{4}$ 1.43 1.07 $\frac{1}{4}$	.32 $\frac{1}{2}$ 1.30 .97 $\frac{1}{2}$
<b>27</b> Inch	Pipe, per foot Ys or Ts 2 $\frac{1}{2}$ feet long) Inlet less than 15 in.) Curves or Elbows	.54 2.70 1.62	.49 $\frac{1}{2}$ 2.47 $\frac{1}{2}$ 1.48 $\frac{1}{2}$	.45 2.25 1.35
<b>30</b> Inch	Pipe, per foot Ys or Ts 2 $\frac{1}{2}$ feet long) Inlet less than 15 in.) Curves or Elbows	.66 3.30 1.98	.60 $\frac{1}{2}$ 3.02 $\frac{1}{2}$ 1.81 $\frac{1}{2}$	.55 2.75 1.65
<b>33</b> Inch	Pipe, per foot Ys or Ts 2 $\frac{1}{2}$ feet long Curves or Elbows			
<b>36</b> Inch	Pipe, per foot Ys or Ts 2 $\frac{1}{2}$ feet long Curves or Elbows			

R P S and Single H H Traps. 3" 4" 5" and 6" = 8 Foot Pipe. 8" 9" and 10" = 10 Foot Pipe. 12" = 15 Foot Pipe.

Y and T with Inlet 15" and larger, on Pipe up to 24" inclusive = 7 Foot Pipe, over 24" = 6 Foot Pipe.

Double Y and T add price One Foot Pipe to price Single Branch.

50% additional for Y and T Inlets, 15-inch and larger, on any size Pipe.



## INFORMATION ON BUILDING BLOCKS, &c.

The Impermeable Vitrified Building Blocks, illustrated on page 24, are certain to replace the more costly materials as they become better known. The points of superiority, briefly stated, are: Greatly reduced cost of material; lessened cost of construction by reason of lighter weight and greater results obtained from each movement of the mechanics and workmen handling the same; it is thoroughly vitrified, and, consequently, impervious to moisture and practically indestructible; it makes a building that is always free from dampness, so common in the solid wall construction, and is warmer in winter and cooler in summer than any other.

Many other decided advantages go with the use of these Blocks, and, properly laid, they will make a very handsome residence or business block, and are extensively used in warehouses, stables, &c., in the larger cities and towns.

We manufacture the ornamental, or rock-faced, the ribbed and the plain blocks, and endeavor to carry a full stock of each, with the corner tile, octagon shape for bow window walls, and blocks cut to receive joists. We ship material complete, from plans if desired, and always include in our shipments a sufficient number of blocks in shorter lengths than regular, viz., 1' 2' 4' 6' and 8' to enable the builder to properly break joints on any wall.

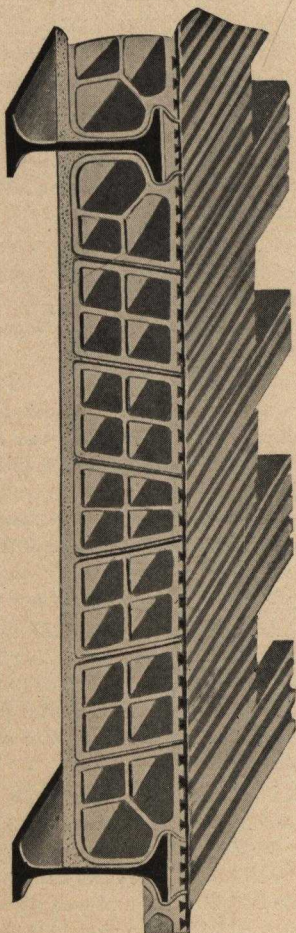
In estimating the cost of a building, experience has shown that one mason, with a helper, will lay more than 30 blocks per hour, or less than two cents each, and the quantity of mortar used is less than one-half of that required for the same thickness of a stone wall.

For foundation and cellar walls, Building Blocks are second to none; made of the best grade of fire clay for the purpose, and the greatest care to preserve straight and true lines and corners, thoroughly and evenly burned (and well glazed when so ordered), they will give the very best results.

We can make any special shapes that may be required and solicit inquiries from interested parties. The prices, furnished on application, will appeal to you.

## FIRE PROOF BUILDING MATERIAL

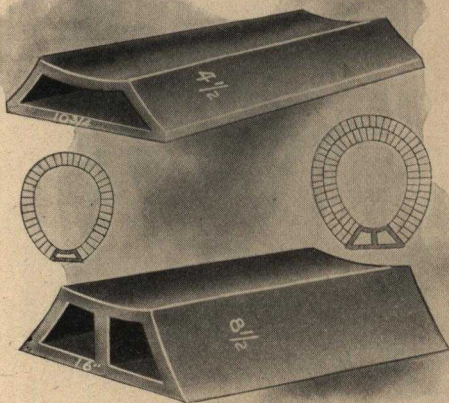
HOLLOW TILE FLOOR ARCHES AND BEAM COVERING



FOR STRUCTURAL IRON BUILDINGS, END AND SIDE CUT, ALL SHAPES AND DIMENSIONS

Write for prices and discounts.






## INVERT BLOCKS

### Single and Double Rings

FOR BOTTOMS OF BRICK SEWERS

Weight—Single Ring, 25 lbs. per foot; Double Ring, 45 lbs. per foot.

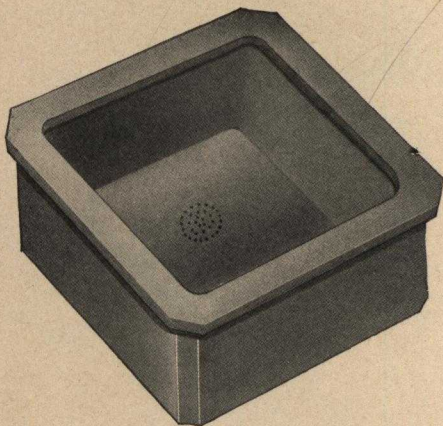
Write for prices and specifications.

 We make anything in the line of Vitrified Fire or Shale Clay products. Write us, with sketch of any special shape required.

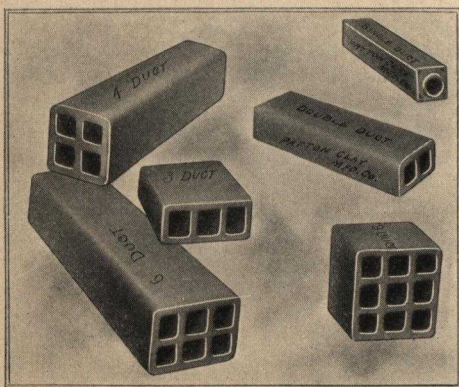
### PRICE LIST OF DRAIN TILE

SIZE	Weight per Foot	No. of feet in Minimum Car Load of 24,000 lbs.	Price per 1000 Feet	Ys Ts Ls and Curves EACH
2 inch Calibre	3½ lbs	7,000 feet	\$ 12 00	.05
2½ " "	4 " "	6,000 " "	15 00	.05
3 " "	5 " "	5,000 " "	20 00	.10
4 " "	7½ " "	3,500 " "	30 00	.10
5 " "	10 " "	2,500 " "	40 00	.15
6 " "	13 " "	2,000 " "	55 00	.20
8 " "	20 " "	1,200 " "	90 00	.30
10 " "	30 " "	800 " "	135 00	.50
12 " "	40 " "	600 " "	180 00	.75

Drain Tile Fittings are net. Rings furnished when required at 50% of one foot of tile.

**HORSE TROUGH**

Outside size, 16 inches by 20 inches—8 inches deep  
 Weight, 77 pounds  
 \$5.00 each.

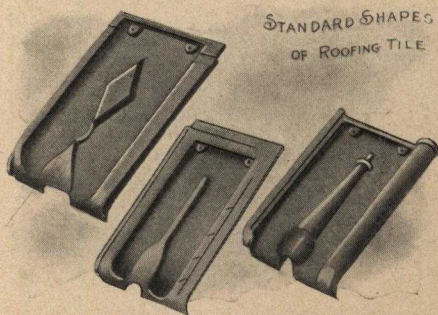
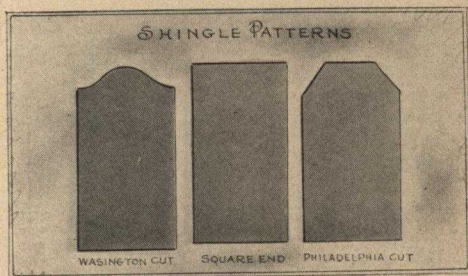
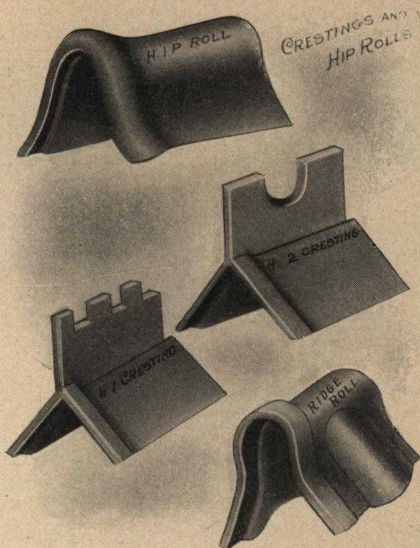
**ELECTRICAL CLAY CONDUITS**

Three, Four and Six  
 Duct Conduits

One, Two and Nine  
 Duct Conduits

Write for prices.





Write for prices or estimates to be made from your plans.

## PAVING, BUILDING AND SIDEWALK BRICK

We operate the largest and most complete plant in the State, fitted with the latest and best machinery, and, with a daily capacity of one hundred thousand, can assure you prompt shipments, together with a superior article, in either building, paving or sidewalk brick.

Especial care is given to the grading and shading of our product, and, with the same attention to the manufacturing, we can please you, whatever your requirements.

Our "Patton Paver" is offered to fill the most exacting specifications for street paving, and is manufactured in blocks and brick, as shown below. We can also furnish the same article in wire-cut, if desired.

Our brick are made of the very best Pennsylvania fire clay for the buff colors and from a superior shale in the red and darker shades.

For street paving, we furnish either, under guarantee to meet any standard test or to compare favorably with any other manufacture.

Our sidewalk brick, of the same material, will be found perfect in shape, which is so essential to good work, and can be shipped from stock, with the necessary corners, in either color.

Building Brick receives here the full care it deserves, and we can furnish you brick in keeping with your plans, whether they be of the highest architecture or a modest home.

We solicit inquiries or a visit to our plant from prospective buyers, and will be pleased to submit results of the tests made with our pavers.

**PAVING BLOCKS**, Rounded Corners, 43 to square yard,  $9\frac{1}{4} \times 3\frac{1}{4} \times 4$ , weight 9 lbs.

**PAVING BRICK**, Rounded Corners, 56 to square yard,  $9\frac{1}{4} \times 2\frac{1}{2} \times 4$ , weight 7 lbs.

**FIRE BRICK AND FIRE CLAY** for various purposes can be furnished you at a material saving from the price you have been paying.

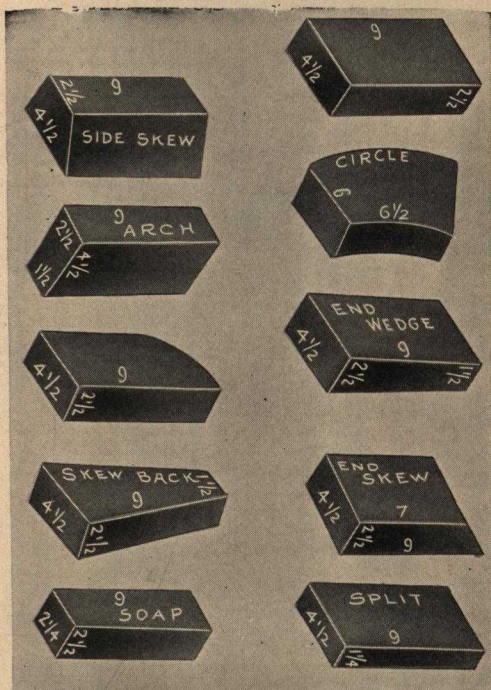
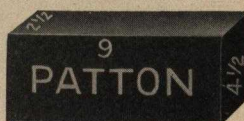
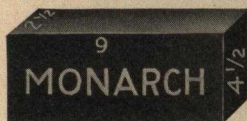
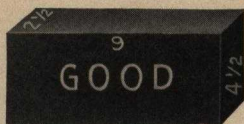
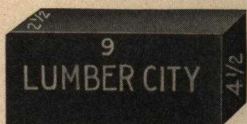


PAVING BLOCK  $9\frac{1}{4} \times 3\frac{1}{4} \times 4$ .

PAVING BLOCK  $9\frac{1}{4} \times 2\frac{1}{2} \times 4$ .



## FIRE BRICK SHAPES



All standard shapes carried in stock. Special shapes made up promptly from drawings.

Ground Fire Clay in bulk, or bags of 100 lbs. and 200 lbs.

One ton of Ground Clay should lay about 3,000 Brick.

If interested sufficiently, write for our 50 page catalog exclusively on Fire Brick.

## LAWN VASES

No. 7 VASE



Height of Vase, 21 inches.  
Height of Pedestal, 22 inches.  
Price complete, \$10.00.

No. 6 VASE



Height of Vase, 21 inches.  
Height of Pedestal, 33 inches  
Price complete, \$9.00.

No. 1 VASE AND PEDESTAL



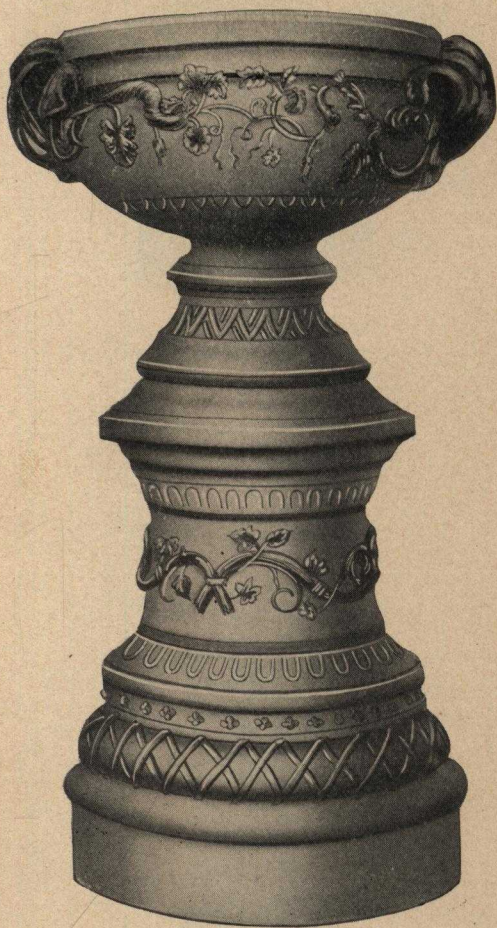
Vase 18 inches high, 28 inches wide.  
Pedestal, 13 in. high, Base, 18 in. square.  
Price, \$12.00.



**LAWN VASE**

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NO. 10 WARWICK VASE AND PEDESTAL.

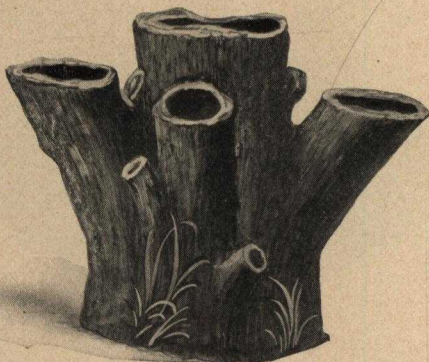


Vase 29 inches high, 39 inches wide.  
Pedestal 39 inches high and 22 inches wide.  
Price complete, \$20,00.

## RUSTIC STUMPS

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NOS. 1 AND 2 RUSTIC STUMPS



No. 1—24 inches high.

No. 1—18 inches diameter base.

No. 2—22 inches high.

No. 2—14 inches diameter base.

No. 1—List Price \$20.00.

No. 2—List Price \$15.00.

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## UMBRELLA STANDS

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NO. 1 UMBRELLA STAND



25 inches high, 11 inches wide.

List Price \$8.00.



## CUBIC YARDS OF EXCAVATION REQUIRED PER LINEAL FOOT IN TRENCHES

Width	Depth	4 Feet	6 Feet	8 Feet	10 Feet	12 Feet	14 Feet	16 Feet	18 Feet	20 Feet	22 Feet	24 Feet	26 Feet
2 feet.....	.....	0.30	0.44	0.59	0.74	0.89	1.04	1.18	1.33	1.43	1.63	1.78	1.93
2½ ".....	.....	0.37	0.53	0.74	0.93	1.11	1.30	1.48	1.67	1.85	2.04	2.22	2.41
3 ".....	.....	0.44	0.66	0.89	1.11	1.33	1.56	1.78	2.00	2.22	2.44	2.66	2.89
3½ ".....	.....	0.52	0.78	1.04	1.30	1.56	1.82	2.07	2.33	2.59	2.85	3.11	3.37
4 ".....	.....	0.59	0.89	1.18	1.48	1.78	2.07	2.37	2.67	2.96	3.26	3.55	3.85
4½ ".....	.....	0.66	1.00	1.33	1.67	2.00	2.33	2.67	3.00	3.33	3.68	4.00	4.33
5 ".....	.....	0.74	1.11	1.48	1.85	2.22	2.59	2.96	3.33	3.70	4.07	4.44	4.81
5½ ".....	.....	0.82	1.22	1.63	2.03	2.44	2.85	3.26	3.67	4.07	4.48	4.89	5.30
6 ".....	.....	0.89	1.33	1.78	2.22	2.66	3.11	3.55	4.00	4.44	4.89	5.33	5.78
6½ ".....	.....	0.96	1.44	1.93	2.40	2.89	3.37	3.85	4.33	4.81	5.30	5.78	6.26
7 ".....	.....	1.04	1.55	2.07	2.59	3.11	3.63	4.15	4.67	5.19	5.70	6.22	6.74
7½ ".....	.....	1.10	1.66	2.22	2.77	3.33	3.89	4.44	5.00	5.55	6.11	6.67	7.22
".....	.....	1.18	1.78	2.37	2.96	3.55	4.15	4.74	5.33	5.92	6.52	7.12	7.70

## NO. FEET IN MINIMUM CAR LOAD (24,000 LBS.)

BRICK, &amp; C., 40,000 LBS. MIN.

STANDARD PIPE		DOUBLE STRENGTH		FLUE LININGS	
3 inch.....	3600 feet	15 inch.....	400 feet	4½ x 8½ inch.....	1800 feet
4 ".....	2800 "	18 ".....	290 "	4½ x 13 ".....	1300 "
5 ".....	2200 "	20 ".....	240 "	4½ x 18 ".....	600 "
6 ".....	1600 "	21 ".....	200 "	7½ x 7½ ".....	1600 "
8 ".....	1050 "	22 ".....	190 "	8½ x 8½ ".....	1300 "
9 ".....	900 "	24 ".....	175 "	8½ x 13 ".....	1050 "
10 ".....	700 "	27 ".....	110 "	8½ x 18 ".....	550 "
12 ".....	550 "	30 ".....	100 "	13 x 13 ".....	600 "
		33 ".....	80 "	13 x 18 ".....	450 "
		36 ".....	70 "	18 x 18 ".....	320 "

## FLUE LININGS

## DOUBLE STRENGTH

## STANDARD PIPE

Building Brick.....7000

Fire Brick.....6000

Paving Brick.....6000

Paving Blocks.....4500

Building Blocks—

8 x 8 x 16.....1200

8 x 10 x 16.....800

8 x 12 x 16.....750

## CARRYING CAPACITY OF SEWER PIPE

When the area to be drained and the fall of the sewer per hundred feet is known, the size of the Pipe required can be easily ascertained by referring to the following table, which shows the number of gallons discharged per minute by specified sizes and grades. In main sewers this flow, of course, is greatly increased by the added pressure of connecting laterals.

Carrying Capacity—Gallons per Minute.

Size of Pipe	1 in. fall per 100 ft.	2 in. fall per 100 ft.	3 in. fall per 100 ft.	6 in. fall per 100 ft.	9 in. fall per 100 ft.	1 ft. fall per 100 ft.	2 ft. fall per 100 ft.	3 ft. fall per 100 ft.
3 inch.....	13	19	23	32	40	46	64	79
4 " .....	27	38	47	66	81	93	131	163
6 " .....	75	105	129	183	224	258	364	450
8 " .....	153	216	265	375	460	529	750	923
9 " .....	205	290	355	503	617	711	1006	1240
10 " .....	267	378	463	655	803	926	1310	1613
12 " .....	422	596	730	1033	1273	1468	2076	2554
15 " .....	740	1021	1282	1818	2224	2464	3617	4467
18 " .....	1168	1651	2022	2860	3508	4045	5704	7047
24 " .....	2396	3387	4152	5871	7202	8303	11744	14466
30 " .....	4187	5920	7252	10557	12580	14504	20516	25277

Brick Sewers of the same size will carry from 35% to 40% less than Sewer Pipe.

Statistics show the maximum rain fall to be about one inch per hour, except during very heavy and uncommon storms.

One inch rain fall per hour gives 22,633 gallons per hour for each acre, or 377 gallons per minute per acre.

Experience shows that, owing to various obstructions, not over 50% or 75% of the rain falling will reach the drain within the same hour. Due allowance should be made for this fact in determining the size of Pipe required, as severe storms are generally of short duration.

All authorities agree that these Pipes have a carrying capacity of fifty per cent. over brick sewers of the same size.



## USEFUL INFORMATION FOR PRACTICAL MEN

### Length of Sewer 1 Barrel of Cement Should Lay.

Size Pipe...	6"	8"	10"	12"	15"	18"	20"	24"
Len. in ft...	1200	675	450	300	190	130	100	70

### DIRECTIONS FOR LAYING SEWER PIPE

Commence at the lower end or outlet of the proposed drain and grade trench with a uniform inclination throughout its entire length.

After bringing bottom of trench to true uniform grade, excavate a suitable depression for each socket, so that the body of the pipe when laid will have a full, firm bearing on the ground.

Commence laying the pipe at the outlet, with all sockets facing up grade.

For waste or drain pipes, where perfectly tight joints are not required, the pipe can be used without filling in sockets, but where tight joints are necessary, use cement mortar made of one-half each cement and good sharp sand. Soft clay can also be used for filling joints, but mortar is, of course, better. Where mortar is used, be sure to carefully wipe inside of pipe so as to leave a smooth surface, free from projections or lumps at the joints.

It is most important that pipe be laid on a solid bearing throughout its entire length and that the sides be carefully rammed to distribute pressure evenly over entire surface of pipe.

In laying sizes from 8-inch up, it is safer to dig a narrow trench, say 6 to 8 inches wide and 3 to 6 inches deep, according to size, in middle of trench, with depressions for sockets, as advised above. The pipes being laid in this manner will be sure of firm bearing along the sides, and if the loose earth is well packed and rammed from this bearing up to a point above centre line of pipes, they will stand almost any amount of pressure.

We have never heard of a single instance where our pipe, properly laid and bedded, has been crushed by the weight of filling in any depth cut.

## BRICK WORK AND CEMENT

Sizes of bricks vary, due to different clays used, also to their position in the kiln in burning. The usual size of building brick is  $8\frac{1}{4} \times 4 \times 2\frac{1}{4}$  inches. In computing brick work, the following table is generally used. Openings over two feet square are deducted; arches are counted from the spring; ornamental work one and one-half to two bricks for one; pillars are measured on their face only; corners are not measured double as in stone work.

4" wall.....	(1 brick)	.....	7 bricks	} Per Superficial Foot of Wall
8" " .....	(2 " )	.....	14 " "	
12" " .....	(3 " )	.....	21 " "	
17" " .....	(4 " )	.....	28 " "	

A cubic yard of mortar requires one cubic yard sand and 9 bushels lime—will fill 30 hods and will lay about 1,500 brick.

At usual prices for material and labor, the cost of lime mortar is about \$2.25 per M. brick, and cement mortar, with cement at \$1.50 per barrel, about \$3.00 per M. brick.

One thousand brick, closely stacked, occupy about 53 cu. ft., and old brick cleaned and closely stacked about 72 cu. ft.

Street Paving Bricks measure  $9 \times 4 \times 2\frac{1}{2}$  inches and lay 56 to the square yard.

Street Paving Blocks measure  $9\frac{1}{4} \times 4 \times 3\frac{1}{4}$  inches and lay 43 to the square yard.

Sidewalk Pavers, laid flat, measure  $8\frac{1}{2} \times 4\frac{1}{4} \times 1\frac{1}{2}$  to 2 inches and lay  $4\frac{1}{2}$  brick to the square foot, or about 40 to the square yard.

Corner and Angle Brick charged same price each as whole brick.

Brick should be sound and hard and of a density to give a clear, ringing sound when two are struck together; should not absorb more than ten per cent. of its weight of water; crushing strength should not be less than 4,000 lbs. per square inch. Our brick will show several times this strength.

Lime mortar varies according to its uses. In one-to-three mortar, one barrel of unslacked lime will make about  $6\frac{3}{4}$  barrels of mortar; in one-to-two



mortar, about 1 barrel of quick lime to 5 barrels of sand are used.

Cement mortar varies more widely—from one-to-one for a very rich mortar to one-to-six or more, according to its purposes.

Cement mortar should always be used for brick and stone work below grade or in damp places, also for heavily loaded piers, and in arches of large span, as well as for setting coping stones, and wherever the work is especially exposed to the weather. Portland cement should be used under water and in heavy piers, &c.; elsewhere natural or Rosendale cement will answer every requirement.

One barrel of lime of 225 lbs. and one cubic yard of sand will make one cubic yard of one-to-three mortar and will lay 1,500 to 2,000 brick or 3 cubic yards of rubble masonry;  $1\frac{3}{4}$  bbls. Portland cement and 1 yard of sand will make one cubic yard of one-to-four mortar and will lay same as above, or about 14 cubic yards of ashlar masonry.

About 25 gallons of water are required to slack the lime and mix the mortar to lay up 1,000 brick.

One perch of masonry equals  $24\frac{3}{4}$  cubic feet, or, as usually figured, 25 cubic feet.

To find capacity of round cisterns or tanks, multiply the square of the mean diameter by the depth, all in feet, and this product by  $5\frac{7}{8}$ , the result will be contents in gallons.

To find contents in barrels, take  $\frac{3}{16}$  of the product.

A barrel contains  $31\frac{1}{2}$  gallons.

A barrel of Portland cement contains  $3\frac{1}{2}$  cubic feet and weighs net 380 pounds.

The following estimates will be helpful to persons who have had little experience in brick and stone work.

One foot thick, one foot high, twelve feet long requires one-half bushel lime and two and one-half bushels sand, or one-quarter barrel cement and two and one-half bushel sand.

One and a half feet thick, one foot high, twelve feet long, requires three-quarter bushel lime and three and three-quarter bushels sand, or one-half barrel cement and three and three-quarter bushels sand.

Two feet thick, one foot high, twelve feet long, requires one bushel lime and five bushels sand, or three-quarter barrel cement and five bushels sand.

Plasterers' work is measured by the square yard, consisting of nine square feet.

In arches, the girth around them multiplied by the length will give the superficies.

Ten bushels good lime, two bushels good hair, 100 pounds plaster paris, two cubic yards clean, sharp sand, 1,400 lath, one pound lath nails will plaster 100 square yards.

### Properties of Circles

Diameter being given, to find circumference, multiply diameter by 3.1416.

Diameter given, to find area, square the diameter and multiply the product by .7854, or multiply  $\frac{1}{2}$  the diameter by  $\frac{1}{2}$  the circumference.

Area given, to find the diameter, divide the area by .7854 and extract the square root of the quotient.

Diameter given, to find side of a square containing the same area, multiply the diameter by .8862.

To find the surface of a sphere, square the diameter and multiply by 3.1416.

To find cubical contents of a sphere, cube the diameter and multiply by 5236.

To find cubical contents of a cone or pyramid, multiply the area of the base by  $\frac{1}{3}$  the perpendicular height.

To find cubical contents of a wedge, multiply the area of the base by  $\frac{1}{2}$  the perpendicular height.

### Capacities of Cisterns and Wells

In gallons for each 10 inches in depth.

DIAM.	GALS.	DIAM.	GALS.
2 feet.....	19	11 feet.....	592
3 " .....	44	12 " .....	705
4 " .....	78	13 " .....	827
5 " .....	122	14 " .....	959
6 " .....	176	15 " .....	1101
7 " .....	240	20 " .....	1958
8 " .....	313	25 " .....	3050
9 " .....	396	30 " .....	4406
10 " .....	489		

A gallon of water weighs  $8\frac{1}{3}$  lbs. and contains 231 cubic inches.



A cubic foot of water weighs  $62\frac{1}{2}$  lbs. and contains 1728 cubic inches or  $7\frac{1}{2}$  gallons.

Doubling the diameter of a pipe increases its capacity four times.

To find the contents of a four-sided vessel, in gallons, multiply length, breadth and height in inches and divide product by 231.

### Size of Boxes for Different Measures

A box 24 inches long by 16 inches wide and 28 inches deep will contain a barrel (3 bushels.)

A box 24 inches long by 16 inches wide and 14 inches deep will contain half a barrel.

A box 16 inches square and  $8\frac{2}{3}$  inches deep will contain one bushel.

In purchasing anthracite coal, 20 bushels are generally allowed for a ton.

### Weight and Volume of Coal

1 cubic foot of Egg Coal Weighs 55.6 lbs. or 40 cu. ft. to ton

1	"	Stove	"	"	57.5	"	39	"	"
1	"	Nut	"	"	56.7	"	39.5	"	"
1	"	Pea	"	"	64.8	"	41	"	"
1	"	Bitu's	"	"	54	"	42	"	"

Cubic yards of earth per lineal foot in ditches, with side slopes of one foot in ten.

Bottom Width	DEPTH IN FEET											
	4	5	6	7	8	9	10	12	14	16	18	20
2 feet.....	.36	0.48	0.60	0.72	0.86	0.99	1.15	1.46	1.80	2.19	2.59	2.96
2½ feet.....	.44	0.57	0.71	0.85	1.01	1.16	1.33	1.68	2.06	2.48	2.92	3.33
3 feet.....	.51	0.66	0.82	0.98	1.16	1.33	1.51	1.90	2.32	2.80	3.25	3.70
3½ feet.....	.59	0.76	0.93	1.11	1.30	1.49	1.70	2.12	2.58	3.10	3.58	4.07
4 feet.....	.66	0.84	1.04	1.24	1.45	1.66	1.88	2.34	2.84	3.40	3.91	4.44
4½ feet.....	.74	0.94	1.15	1.37	1.60	1.83	2.07	2.57	3.10	3.70	4.24	4.81
5 feet.....	.81	1.04	1.26	1.50	1.75	2.00	2.25	2.80	3.36	4.00	4.57	5.18

Table of Brick in Circular Sewers one foot in length

Diam. of Sewer..	2 ft.	2½ ft.	3 ft.	3½ ft.	4 ft.	5 ft.	6 ft.	8 ft.	10 ft.
For 4 Inch Wall..	42	53	63	73	83	105	...	...	...
For 8 Inch Wall..	115	150	170	195	215	230	305	395	480

Table of Brick in Egg-shaped Sewers one foot in length and eight inches thick.

	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.
Inside Dimensions....	2	2½	2⅓	2½	2⅔	3	3½	4	5
	×	×	×	×	×	×	×	×	×
No. of Brick....	145	160	170	178	185	205	235	260	315

## Number of Brick in Flushtank.

Inside Diameter	DEPTH IN FEET				
	5	6	7	8	9
4 feet.....	1124	1344	1560	1780	2000
5 feet.....	1417	1680	1940	2200	2460
6 feet.....	1820	2440	3060	3680	4300

Number of Brick in Manholes—depth below bottom of cover.

DIAM.	HEIGHT IN FEET							
	4	5	6	7	10	12	15	20
3.5 ....	677	835	980	1125	1555	1845	2279	3007
4.0 ....	740	880	1030	1180	1625	1948	2410	3180
4.5 ....	830	1040	1190	1370	1910	2270	2826	3730

To lay 1,000 brick in Sewers, Manholes, etc., requires approximately two barrels cement and one and one-eighth tons sand.

## Cast Iron Pipe

Safe thickness of Metal and weight per length, including Bells for different sizes and under various heads of water.

Size inside Diameter	100 ft. Head or 43.30 lbs. Pressure		150 ft. Head or 64.85 lbs. Pressure		200 ft. Head or 86.60 lbs. Pressure		250 ft. Head or 108.25 lbs. Pressure		300 ft. Head or 129.90 lbs. Pressure		Contents in Gallons for 1 ft. in length
	Thickness of Metal	Weight per Length	Thickness of Metal	Weight per Length	Thickness of Metal	Weight per Length	Thickness of Metal	Weight per Length	Thickness of Metal	Weight per Length	
	IN.	LBS.	IN.	LBS.	IN.	LBS.	IN.	LBS.	IN.	LBS.	
2	.312	67½	.330	72	.348	76½	.366	81	.384	86	.163
3	.353	149	.362	153	.371	157	.380	161	.390	166	.367
4	.373	204	.385	211	.397	218	.409	226	.421	235	.652
6	.411	330	.429	345	.447	361	.465	377	.483	393	1.469
8	.450	475	.474	502	.498	529	.522	557	.546	584	2.611
10	.489	641	.519	682	.549	723	.579	766	.609	808	4.081
12	.527	826	.563	885	.599	944	.635	1004	.671	1064	5.876
14	.566	1031	.608	1111	.650	1191	.692	1272	.734	1352	7.997
16	.604	1253	.652	1360	.700	1463	.748	1568	.796	1673	10.44
18	.643	1500	.697	1630	.751	1761	.805	1894	.859	2026	13.22
20	.682	1763	.742	1924	.802	2086	.862	2248	.922	2412	16.32
24	.759	2349	.831	2580	.903	2811	.975	3045	1.047	3279	23.50
30	.875	3376	.965	3735	1.055	4095	1.145	4458	1.235	4822	36.72
36	.990	4581	1.098	5096	1.206	5613	1.314	6133	1.422	6656	52.88
48	1.222	7521	1.366	8431	1.510	9340	1.654	10269	1.798	11195	94.02

All pipe cast in lengths of 12 feet, except the 2-inch, which are cast 9 feet long.

Pipe with flanges weigh about 15 per cent. more than above.

Packing of rubber for flanged Pipe is usually ⅛ inch thick and weighs about 10 pounds to the square yard.



### WATER PRESSURE

The pressure, in pounds, for any head of water may be obtained by multiplying the height in feet by .433—equivalent to 43.3 pounds pressure to 100 feet elevation.

### WEIGHT OF LEAD AND GASKET FOR STREET MAIN

EACH JOINT REQUIRES

	LEAD	GASKET		LEAD	GASKET
2-in. Pipe,	3.25 lbs.	0.059 lbs.	10-in. Pipe,	15 lbs.	0.30 lbs.
3-in. " "	4.72 "	0.075 "	12-in. " "	20 "	0.35 "
4-in. " "	6 "	0.115 "	16-in. " "	25 "	0.45 "
6-in. " "	9 "	0.175 "	18-in. " "	29 "	0.52 "
8-in. " "	12 "	0.250 "	20-in. " "	43 "	0.60 "

### WEIGHT OF MATERIALS

Asphaltum.....	87 lbs. per cubic foot	
Bluestone.....	160	" "
Brick, Common.....	115	" "
Brick, Pressed.....	140	" "
Brick, Fire.....	120	" "
Brickwork in Mortar.....	120	" "
Brickwork in Cement.....	130	" "
Cement, Portland.....	78-90	" "
Cement, Rosendale.....	60	" "
Chalk, Solid.....	145	" "
Charcoal from Birch.....	34	" "
Charcoal from Oak.....	21	" "
Charcoal from Pine.....	18	" "
Clay, Compact.....	119	" "
Coal, Anthracite.....	93	" "
Coal, Anthracite, loose.....	54	" "
Coal, Bituminous.....	80	" "
Coal, Bituminous, loose.....	50	" "
Coke, Loose.....	23-32	" "
Concrete, in Cement.....	140	" "
Concrete, Ordinary.....	119	" "
Earth.....	80-100	" "
Flint.....	162	" "
Fire Clay, Solid.....	120	" "
Fire Clay, Ground.....	80	" "
Glass, Common Window....	157	" "
Glass, Plate.....	172	" "
Gravel.....	110	" "
Granite.....	170	" "
Gutta Percha.....	60	" "
Gypsum.....	143	" "
Gunpowder.....	57	" "
Hay in Mow.....	4	" "
Ice, at 33° F.....	57 ½	" "
Limestone, Solid.....	168	" "
Limestone, Crushed.....	90	" "
Lime, Loose.....	56	" "
Lime, Well Shaken.....	64	" "
Lumber (see next page)		
Metals " " "		
Marble.....	168	" "
Masonry, Ashlar.....	160	" "

Masonry, Rubble.....	180 lbs.	per cubic foot
Mortar, Average.....	106	" "
Pitch.....	72	" "
Plaster of Paris—Cast.....	141	" "
Pumice Stone.....	57	" "
Quartz.....	165	" "
Sand, River.....	117	" "
Sand, Coarse.....	100	" "
Sandstone.....	150	" "
Slate.....	175	" "
Shales.....	162	" "
Snow, Fresh-fallen.....	5-12	" "
Snow, Wet and Compact.....	15-50	" "
Sulphur.....	125	" "
Tar.....	63	" "
Terra Cotta, Solid.....	120	" "
Terra Cotta, Hollow, av.....	65-85	" "
Trap Rock.....	187	" "
Tile.....	115	" "
Wax, Bees.....	60	" "
Water at 39° F.....	62½	" "
Water.....	8½ lbs.	per gallon.

## METALS

NAME	Per Cu. Ft.	NAME	Per Cu. Ft.
	LBS.		LBS.
Aluminum.....	166	Iron, Cast.....	450
Antimony.....	418	Iron, Wrought.....	480
Bismuth.....	607	Lead, Commercial...	710
Brass, Cast.....	504	Mercury, 60° F.....	846
Brass, Rolled.....	524	Platinum.....	1342
Bronze.....	529	Silver.....	655
Copper, Cast.....	542	Steel.....	490
Copper, Rolled.....	555	Tin, Cast.....	459
Gold, 24 Carat.....	1204	Zinc.....	437

## LUMBER—SEASONED

KIND	Weight Per Ft. B. M.	Weight Per Cu. Ft.
	LBS.	LBS.
Ash.....	3.9	47
Beech.....	3.5	43
Birch.....	3.7	45
Cherry.....	3.5	42
Chestnut.....	3.4	41
Cedar.....	2.9	35
Cork.....	1.3	15.6
Elm.....	2.9	35
Ebony.....	6.3	70
Hemlock.....	2.1	25
Hickory.....	4.4	53
Lignum Vitæ.....	6.9	83
Maple.....	4.1	49
Oak, Live.....	4.9	60
Oak, White.....	4.0	48
Oak, Red.....	3.3	40
Pine, White.....	2.1	25
Pine, Yellow, Northern.....	2.9	35
Pine, Yellow, Southern.....	3.7	45
Sycamore.....	3.1	37
Spruce.....	2.1	25
Walnut.....	3.2	38



To evaporate one cubic foot of water requires the consumption of  $7\frac{1}{2}$  pounds of ordinary coal, or about one pound of coal to one gallon of water.

The average consumption of coal for steam boilers is 12 pounds per hour for each square foot of grate surface.

One ton of coal is equivalent to two cords of wood for steam purposes.

Iron or steel immersed warm in a solution of carbonate of soda (washing soda) for a few minutes will not rust.

Eighty parts of sifted cast iron turnings, two parts of powdered sal-ammoniac and one part of sulphur made into a thick paste with water and mixed fresh for use, makes a good cement for stopping holes in castings.

Cement for Joints.—Paris white, ground, 4 lbs.; litharge, ground, 10 lbs.; yellow ochre, fine, half lb.; half ounce of hemp, cut short; mix well together with linseed oil to a stiff putty. This cement is good for joints on steam or water pipes. It will set under water.

## WEIGHTS AND MEASURES

### LONG MEASURE

Inches.

12 =	1 ft.				
36 =	3 ft. =	1 yd.			
72 =	6 ft. =	2 yd. =	1 fath.		
198 =	$16\frac{1}{2}$ ft. =	$5\frac{1}{2}$ yd. =	$2\frac{1}{4}$ fath. =	1 p., per. or rd.	
7920 =	660 ft. =	220 yd. =	110 fath. =	40 p., =	1 fur.
63360 =	5280 ft. =	1760 yd. =	880 fath. =	320 p., =	8 fur. =
	1 mile.				

### GUNTER'S CHAIN

Inches.

7.92 =	1 link.	
792 =	100 links =	1 chain.
63360 =	8000 links =	80 chains = 1 mile.

### NAUTICAL MEASURE

Nautical Mile.

1 =	6086 feet.
3 =	1 league.
60 =	20 leagues = 1 degree = 69.16 English miles.

### SOLID MEASURE

1728 cubic inches =	1 cubic foot.
46656 cubic inches =	27 cubic feet = 1 cubic yard.
A cubic inch =	.00058 cubic feet.
A cubic foot =	.03704 cubic yards.
128 cubic feet =	1 cord of wood.

## SQUARE MEASURE

Inches.

144 =	1 ft.	
1296 =	9 ft. =	1 yd.
39204 =	272.25 ft. =	30.25 yd. = 1 per.
1568160 =	10890 ft. =	1210 yd. = 40 per. = 1 rood.
6272640 =	43560 ft. =	4840 yd. = 160 per. = 4 roods = 1 acre.
An acre is 69.5701 yards square ; or 208.710321 feet square.		
A township is 6 miles square = 36 sections.		
A section is 1 mile square = 640 acres.		
$\frac{1}{4}$ " " $\frac{1}{2}$ " " =	160 "	
$\frac{1}{16}$ " " $\frac{1}{4}$ " " =	40 "	

## DRY MEASURE

1 pt. =	33.6 cubic inches
2 pt. = 1 qt. =	67.2 cubic inches.
8 pt. = 4 qt. =	1 gal. = 268.8 cubic inches.
16 pt. = 8 qt. =	2 gal. = 1 pk. = 537.6 cubic inches.
64 pt. = 32 qt. =	8 gal. = 4 pk. = 1 bushel.

NOTE.—The Standard United States bushel is the Winchester bushel, which is in cylinder form,  $18\frac{1}{2}$  inches in diameter, and 8 inches deep and contains 2150.42 cu. in.

The English (2218.192 cubic inches.  
Imperial bushel = 1.03152 United States bushels.

The English quarter =  $\begin{cases} 8 \text{ Imperial bushels.} \\ 8\frac{1}{4} \text{ (nearly) United States bushels.} \\ 10.2694 \text{ cubic feet.} \end{cases}$

## TROY WEIGHT

Grains.

U. S. STANDARD

24 =	1 dwt.
480 =	20 dwt. = 1 oz.
5760 =	240 dwt. = 12 oz. = 1 lb. = 22.816 cubic inches of distilled water at 62° Fahrenheit.

## AVOIRDUPOIS WEIGHT

Drachms.

16 =	1 oz. = 437.5 grains Troy.
256 =	16 oz. = 1 lb. = 1.2153 lb. Troy.
6400 =	400 oz. = 25 lb. = 1 quarter.
25600 =	1600 oz. = 100 lb. = 4 quarters = 1 cwt.
512000 =	32000 oz. = 2000 lb. = 80 quarters = 20 cwt. = 1 ton.

## APOTHECARIES' MEASURE

60 min.	= 1 fluid drachm.
58 fluid drachms	= 1 fluid ounce.
16 fluid ounces	= 1 pint.
8 pints	= 1 gallon.

45 drops, or a common teaspoonful, make about 1 fluid drachm ; 2 tablespoonsful, about 1 fluid ounce ; a wineglass, about  $1\frac{1}{2}$  fluid ounces, and a teacupful, about 4 fluid ounces.

## LIQUID OR WINE MEASURE

Gills = 7.2187 cubic inches.

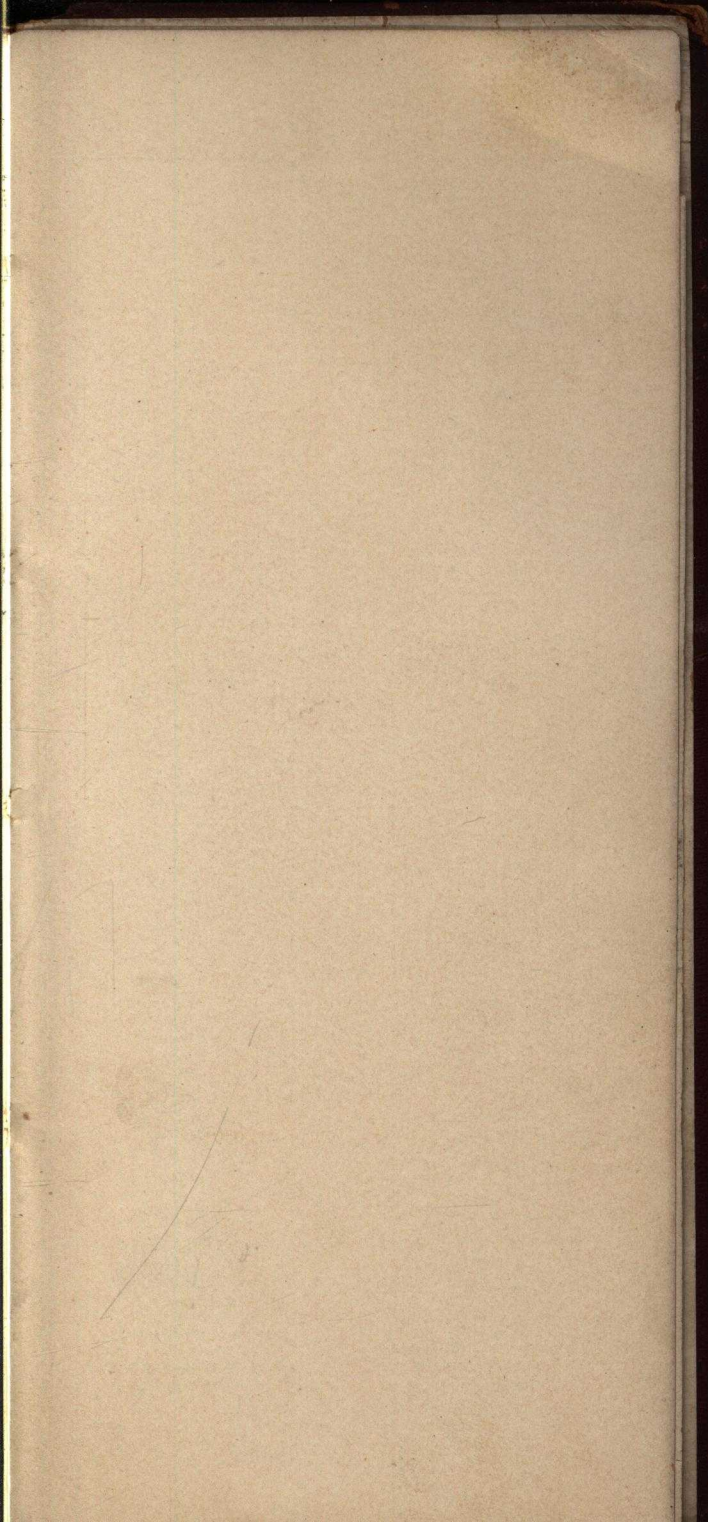
4 =	1 pt. = 28.875 cubic inches.
8 =	2 pt. = 1 qt. = 57.75 cubic inches.
32 =	8 pt. = 4 qt. = 1 gal. = 231 cubic inches.
2016 =	504 pt. = 252 qt. = 63 gal. = 1 hhd.
4032 =	1008 pt. = 504 qt. = 126 gal. = 2 hhd. = 1 pipe.
8064 =	2016 pt. = 1008 qt. = 252 gal. = 4 hhd. = 2 pipe = 1 tun
1 barrel = $31\frac{1}{2}$ gallons.	

## MISCELLANEOUS

1 palm.....	3 inches	1 span.....	9 inches
1 hand.....	4 inches	1 metre.....	3.2809 feet
1 sheet.....	4 pages	1 duodecimo.....	24 pages
1 quarto.....	8 pages	1 eighteen mo.....	36 pages
1 octavo.....	16 pages	1 bundle.....	2 reams

Roll of parchment = 60 sheets.

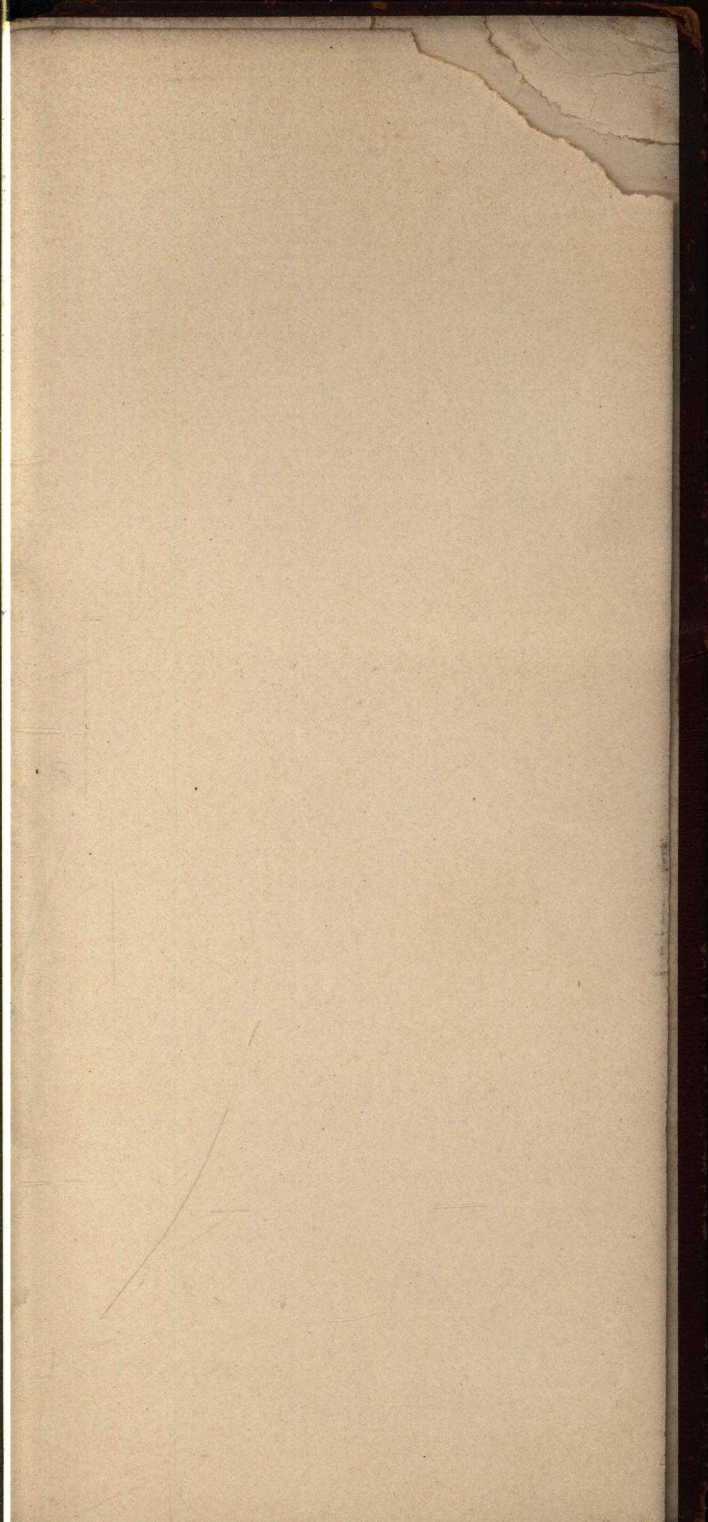


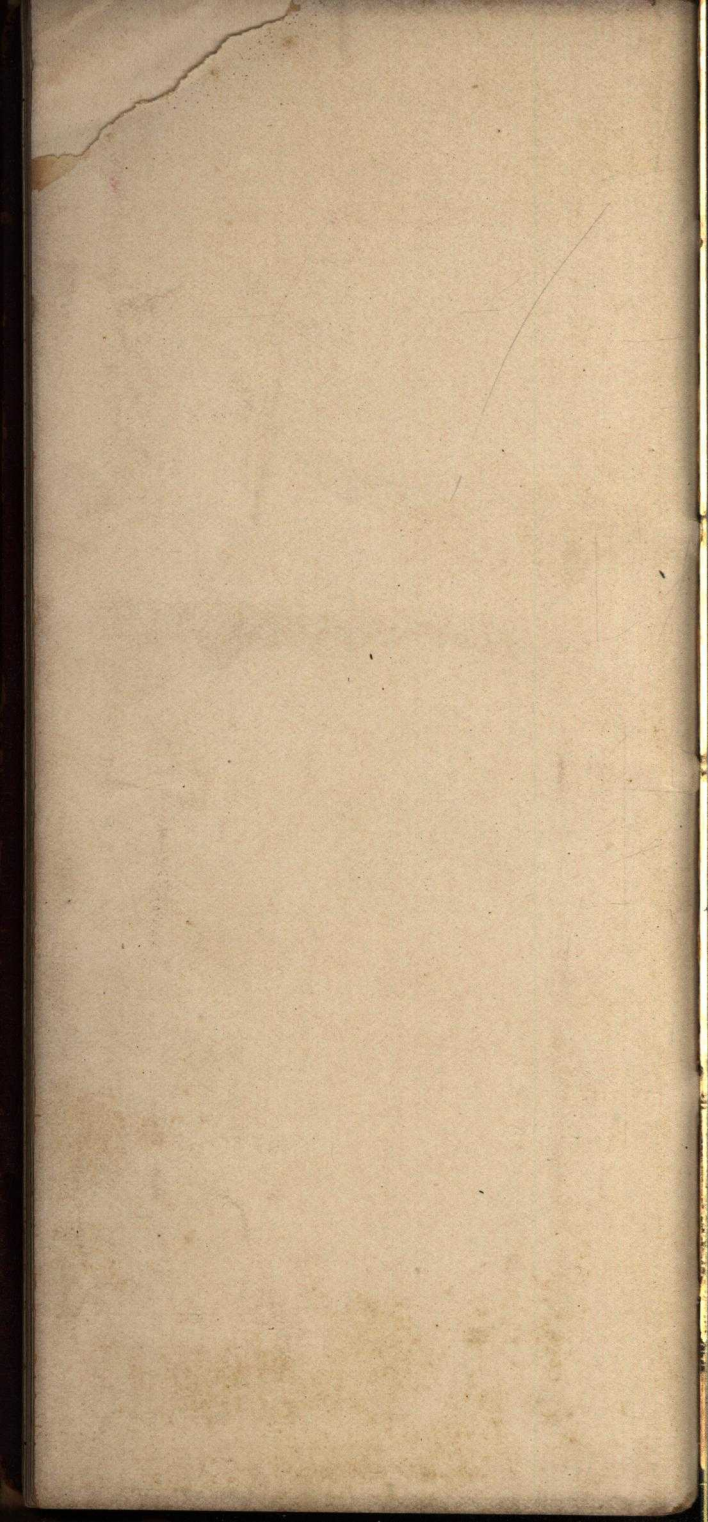




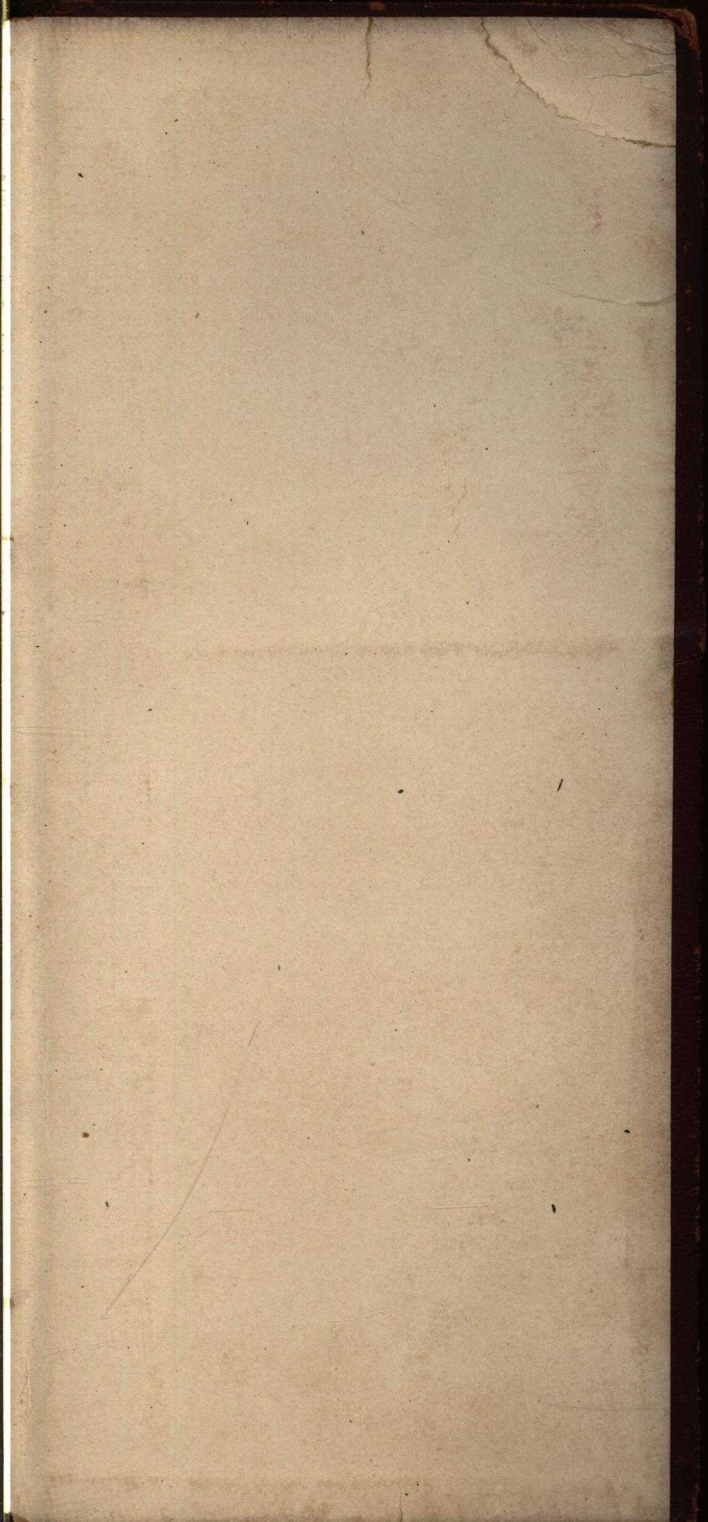
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